

# The **CANADIAN** THRESHERMAN AND **FARMER**

WINNIPEG CANADA  
SEPTEMBER  
NINETEEN SEVENTEEN

*BETTER FARMING — BIGGER CROPS — BETTER PRICES*



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



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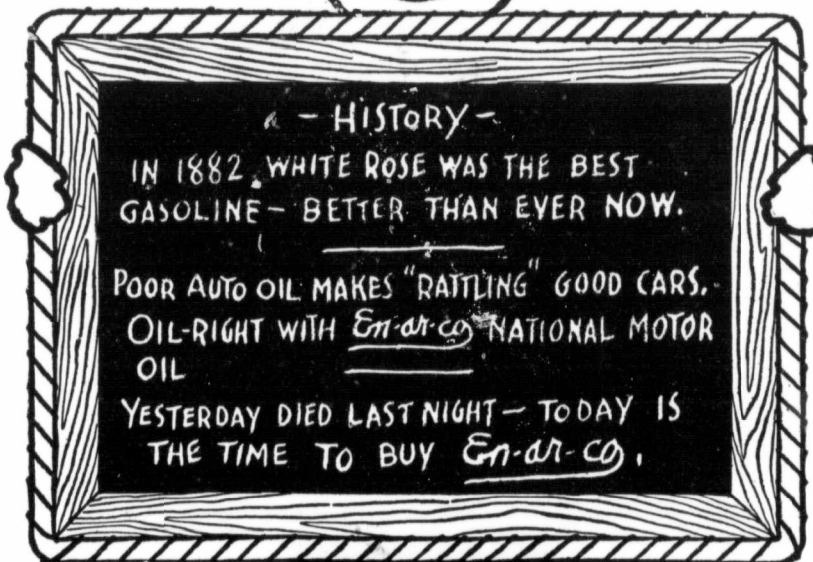
It does not char the wick like ordinary coal-oil.

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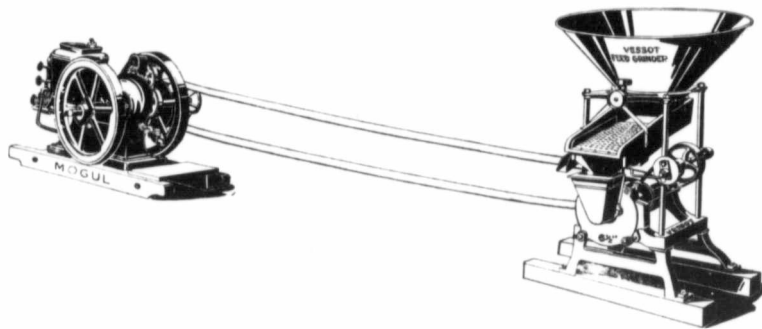
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1 use.....gals. gasoline per year. 1 use.....auto grease per year.  
 1 use.....gals. motor oil per year. 1 use.....gals. kerosene per year.  
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**The Canadian Oil Companies Limited**  
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 36 CANADIAN BRANCHES





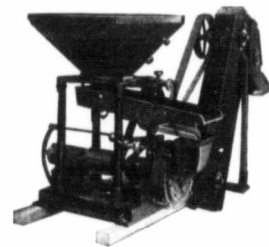
## Invest in a VESSOT and a MOGUL. You Cannot do Yourself a Better Turn

**Y**OU can run a Vessot "Champion" Grinder just as well as any miller could. With it you can save the miller's profit on all kinds of grinding---flax, barley, corn, crushed ear corn, oats, wheat, rye, peas, buckwheat, screenings, mixed grain, or any kind of feed stuff, fine or coarse as desired.

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And it comes from the plates well ground. Vessot plates have such a reputation for good work that we have had to protect our customers and ourselves by placing the trademark "SV" on all the plates. Look for it.

To do its best work a Vessot grinder should be run by the steady power of a Mogul kerosene engine. Then you have an outfit that cannot be beat for good work or economy. Write us a card so that we can send you catalogues of these good machines.



## International Harvester Company of Canada, Limited

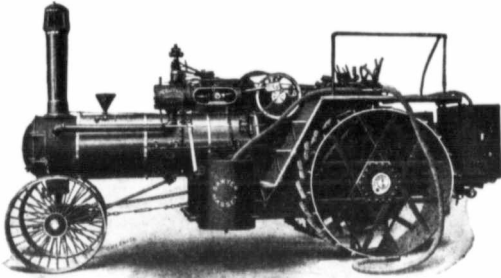
### BRANCH HOUSES

West—Brandon, Man.; Calgary, Alta.; Edmonton, Alta.; Estevan, Sask.; Lethbridge, Alta.; N. 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.

# SAWYER-MASSEY

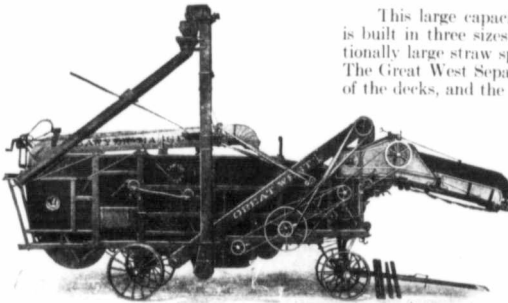
(MADE IN CANADA)



## POWERFUL REARMOUNTED STEAM TRACTORS

In two sizes—22-68 and 25-76 horsepower; designed for heavy duty work and built for pull both at the drawbar and in the belt. These simple cylinder Rearmounted Steam Engines have rocker grates, duplex steam pumps, balanced valves, jacketed boiler, straw burning attachment as part of the regular equipment. The boilers are built to conform to the Alberta and Saskatchewan Boiler Laws, and carry 175 lbs. pressure. These engines have strong, wide face gearing, oversize shafting, wide bearings, exceptionally strong constructed drive wheels, and will give you better service than you expect. If you are interested in Steam Power for threshing or plowing, the handling of an immense amount of heavy work at low cost, and in a short time, send to-day for free information telling what these powerful Steamers will do for you.

## THE NEW MODEL GREAT WEST



This large capacity, 16-bar cylinder Thresher, designed for large farmers and custom work, is built in three sizes, 32 x 56, 36 x 60, and 40 x 64. As they have a very long body and exceptionally large straw space above the decks, they will stand all kinds of crowding without choking. The Great West Separator is the only machine on the market that the speed and length of throw of the decks, and the speed and throw of the shoe can be changed. This enables the thresherman to adjust his machine to the work on hand, doing good work quickly when threshing tough, frozen or wet grain.

Read the following quotation from letter of J. H. and Peter Holstein, of Rhein, Sask., dated September 16th, 1916:—

"Thinking that you would like to hear from us regarding the 32 x 56 Great West Separator and 22-68 Rear-mounted Engine purchased this season, we would say that we threshed over two thousand acres and averaged three thousand bushels per day, and never had any trouble at all. We were always ready to go when the grain was fit to thresh, and may say that we gave all our customers perfect satisfaction. We have had two machines before, and they did not give us as good satisfaction as this one. We would strongly recommend any person who is in the market for a machine to look the Great West Separator and Sawyer-Massey do to help them to decide we will only be too pleased to do it."

Engine over carefully first before purchasing, and anything we can

**FOR A FARMER'S OWN THRESHING**, and that of a few neighbors, we built what we call our No. 1 and No. 2 machines, size 20 x 36 and 28 x 44 respectively. These Separators are light running, easy to adjust and look after, and are especially designed for coupling up with small gasoline or oil engines. One of the strong features of these Separators is the almost total absence of vibration.

This is obtained by balancing up the decks, one deck swinging one way and one the other, also by the use of counter-balancing weights to offset the throw of the decks. This means the Separator is not hard on itself, does not shake itself loose, does exceptionally clean work, and with reasonable care will last a great many years.

Read this letter from James Cummings, of Neepawa, Man., dated April 28th, 1917:

"I am writing you about the No. 1 Separator which I bought last fall. I have not given this Separator a fair trial yet, the grain was not in good shape from the time I got it, but I am well pleased with it. It cleans the grain well, and I can put through 1000 a day of wheat and 1500 of oats with 1000 a day of wheat and 1500 of oats with three teams and a pitcher. I threshed 100 acres of flax with it and put through 700 bushels a day. I would just as soon go into a field of flax as a field of wheat—men who have threshed for years tell me they never saw a Separator handle flax like this one. I had no trouble with this Separator at all, just took it out to the field and started, and I can do the same this fall without any trouble."

We also manufacture complete line of four-cylinder Gas-Oil Tractors, Combination Outfits, Road-Making Machinery, also Steam Engines of a smaller size than those described above.

Talk with our Local Agent in your town, or write for free catalogue and detailed information, stating the size machinery you would like special information on.

## Sawyer-Massey Company, Limited

Branch Offices and Warehouses:  
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Vol. XXII

WINNIPEG, CANADA, SEPTEMBER, 1917

No. 9

IT is just possible that one of the "blessings" created by the Great War will be to turn the eyes of North America in the direction of her own resources and privileges and to rise to an appreciation of her natural endowments such as no other experience would ever have taught her.

From this country, for many years, in the mere matter of sight-seeing and holiday travel, we have been sending hundreds of millions of dollars annually to Europe, while within twenty-four hours comfortable railway travel there are things of beauty and influences that beggar all descriptive faculty to which Europe can offer no earthly comparison.

In the decade just preceding the outbreak of war an expert authority has estimated that the great annual current of tourist traffic which crossed the Atlantic amounted to between \$300,000,000 and \$500,000,000. Everyone knows that the greater part of the money spent in Europe in purely holiday traffic comes from America. Without the regular American incursions from early spring to late fall, the great fashion centres of England, France, Italy and Switzerland—not to speak of the Central Empires—might have put up the shutters and gone to the harvest fields to eke out a bare living.

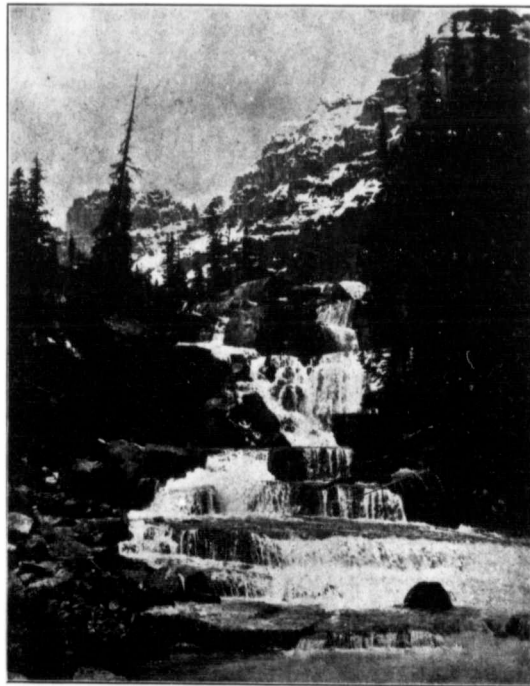
The figures given by a trustworthy authority as to the tourist revenue of the different European "meccas" are very striking, and at the present moment when all these favorite haunts are closed to the American traveller, they do more than point a tale. In 1913 (the year before the war) France received something like \$600,000,000; Switzerland, \$250,000,000 and Italy over \$100,000,000 in purely tourist revenue.

What was it that took the American tourist to Switzerland and Italy? Fine scenery for the greater part, but, of course, much of the rush to these particular countries to behold their exceptional natural beauties was created by the mere circumstance

## Resorts in the Canadian Rockies

that fashion had set in that direction. Society leaders had decreed that it was "it" to see and climb the Swiss Alps and to visit the Italian lakes. Before the development of modern travel, Switzerland was a poor and struggling country, dependent chiefly on her

part in for what it has meant in health of body and soul to the millions who have indulged in it is out of all proportion to the mere dollars spent upon it. It has been said that man is a creature "born with a great deal of curiosity, but very poor eye-



Giant Steps, Head of Paradise Valley, Lake Louise.

lace and jewellery industries for a livelihood; but when the eyes of the common people were opened to a clear view of her great snow-capped mountain range, then "the Alps" became the last thing in world wonders.

And, after all, it was about the most sane development of fashion that its leaders had ever taken

sight." His optic nerve, like all else belonging to his "make-up," is capable of wonderful development and this great art of training the human understanding finds its highest ideal in the contemplation of Nature.

Happiness is the grand objective of all flesh, and if the testimony of the ages could be

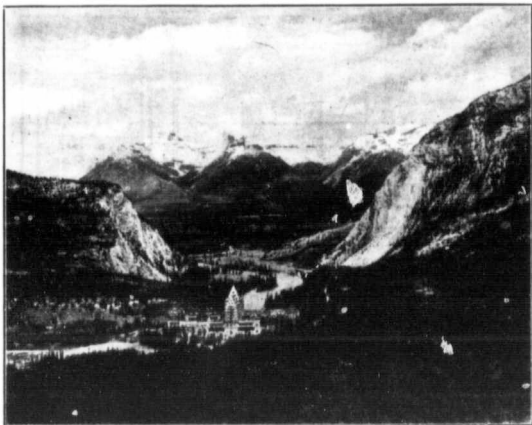
focussed into one sentence, it would be found that nothing in environment can ever take the place of Nature in satisfying the cravings of men and women in their quest for enjoyment that never palls.

Are not the greatest moments in a lifetime those passages in which a man becomes a fit **companion to himself?** The lot of most men is to spend the very greatest part of life mixed up with the crowd from which there seems no escape. The babel of tongues and the clash and jangle of daily life in modern times has a wearing effect on the "bearings" of the human machine that cannot be stated in any formula of mechanical science.

More than half a century of active life spent on two continents has taught the writer that in nothing so much as in the solitary companionship of Nature a man's cup of satisfaction runs over. It is there far more than in any mere product of human genius that perfect rest, restoration and satisfaction are to be found. In time, everything else in the pleasure-hunter's mad career grows stale and shrivels up in its own fever heat. But Nature never surfeits, for Nature is a part of God, and anything that is in harmony with God's Nature is perfectly attuned to the finest note in human felicity.

But for his inherited "bad eyesight," trained observers will tell you that there are marvels in every backyard that would keep a man spellbound in admiration for a lifetime—**had he but the eyes to see them.** "Eyes have they but they see not." The thing that reproduces itself on the retina is but the skeleton or scaffold of some hidden wonder. The wonder, itself, has never been taken in by the brain. First sight is the only sight, and familiarity has condemned it to the rank of "common" things, and when that point has been reached the whole faculty of admiration has been swamped.

The "common person," however, probably has no disposition to spend his recreative hours in



Banff Spring Hotel and Bow River Valley.

microscopic observations. The infinitesimal does not make an instantaneous appeal to most minds, but the stupendous, the majestic, the "awe-inspiring" needs no effort to get it home on the instant to the poorest eyesight and to the most jaded, nerve-shattered mortal in civilization or out of it.

Now the history of human research is unanimous in its opinion that there is nothing in the shape of salubrious environment that will ever take the place of "hill air" and the silent grandeur of Nature in restoring the spent energies of careworn humanity.

Many generations, and probably millions of men and women have borne testimony to the fact that a brief sojourn among Alpine scenery and the pure atmosphere of those everlasting mountain peaks did for them what was evidently beyond the reach of medical science to accomplish.

To-day on this American continent, there are multitudes who would "give anything" (so they say) to get rid of that base feeling that robs them of all power to appreciate the finest things that are offered them in the name of enjoyment; to get back to the guileless eagerness of youth with its brimming cup of enthusiasm for those natural joys that carried no dreg of bitterness in its last drop.

There was never a day in the history of the race that lent itself so completely to this end as the present moment; there was never a chance at the disposal of any people to reach the best the world has to offer in perfect environment, such as is now at the immediate call of practically any citizen of Canada or the United States of America.

If the Alps have done for men what they undoubtedly have most justly had placed to their credit, what of the Canadian Rockies? Here descriptive language is quite inadequate to give even the

faintest impression of what these two words mean—not only to the novice, but to the trained eye of the artist. Whether at the first



Chateau, Lake Louise, and Mount Victoria, Alta.

great burst of the magnificent scene, or after many months sojourn on the heights or in the valleys, it matters not, the effect is unspeakable and a long lifetime can never see very much farther than the mere beginnings of its inexhaustible variety.

We know our Alps, we spent our boyhood within hail of the "wild frowning glories of dark Lochnagar" and we have had our unspeakable few weeks in that part of the Rockies that could comfortably be reached from any point of the track of the Canadian Pacific railway, and the end of it all "beggars description."

We had read a whole library of descriptive redundancies before visiting the Rockies. They wearied us—the very best of them did—with their pure inanity when held up and read in the majestic silence of those mighty things they attempted to describe and to compare with anything else that men could em-

body or visualize for the purposes of comparison.

What Henry Ford said of the virtues of his wonderful car: "Don't exaggerate—the facts are bigger"—might well be printed in type that even a blind man could appreciate and handed to every one of the great army of itinerants who have assayed to give the world an idea of the Canadian Rockies.

All the world knows what Edward Whymper of Matterhorn fame and others have said about being "spellbound by the illimitable horizon of virgin peaks"; that "Fifty or sixty Switzerlands in one" was Whymper's summary of "this almost untrodden playground, this unrealized heritage of a great continent of travelers."

This is all right, and far from outstepping the facts, it and all else of the patient elaboration of the globe-trotting fraternity does

inarticulate but living presence of this matchless expression of Nature. Its magnitude and ever-varying splendor is far beyond the most ambitious capabilities of language or pictorial art.

The pictures on these pages are the best that a magazine article can do in its altogether too brief space to awaken interest in a subject that is of supreme personal and national interest first of all to every citizen of Canada, but scarcely less to the travelling health-seeking millions of the "Stars and Stripes."

Things that are easily available suffer from the start from an absence of all disposition on the part of men to value them according to their intrinsic worth. The very proximity and availability of "The Rockies" has certainly not helped in any effort to popularise them as holiday or health resorts, but now that the avenue has for the time being been almost wholly closed to Europe, it is not unlikely that they will receive the attention that should always have been accorded to them.

Everything to the last dot in picturesque literature, guide-books, timetables, transportation rates and hotel tariff, etc., can be had free from any one of thousands of offices and agencies of the Canadian Pacific Railway Co. There is now a vast accumulation of this class of literature—some of it of such high artistic merit and literary excellence that it would do honor to any drawing-room or library table, and there is no cheseparing tendency to be noted in its free distribution.

Now, to the average citizen—the work-wearied tradesman, merchant, or farmer—it matters little how "wonderful" these great Rockies may be, not many would be disposed to visit them unless assured of comfort, convenience and safety in getting to them, and



Three Sisters, near Banff.



of inexpensive and still entirely satisfactory accommodation when the great objective is reached.

In this connection we quote from an authoritative statement of one of the most recent guides to come off the press:

"Ever since 1887, when the engineers first flung the steel across this universe of peaks, the Canadian Pacific Railway has grappled with the task of making it the playground of North America. No human being can be expected to sit up twenty-four hours on a stretch watching scenery, and, therefore, hotels were built at convenient points along the line, so that travellers could rest, and, if they so desired, could explore the neighboring country.

"These hotels have grown with time, and districts, such as Banff, Lake Louise, Field and Glacier, have become so popular that travellers from all over the world come each year to the matchless scenery of the Canadian Rockies to reinvigorate their systems with the pure air and the opportunity for sport of every kind—fishing, hunting, Alpine climbing, rides, drives, golf — knowing that there are large, comfortable, well-equipped mountain hotels run by the Canadian Pacific Railway itself on Canadian Pacific standard — than which none is better.

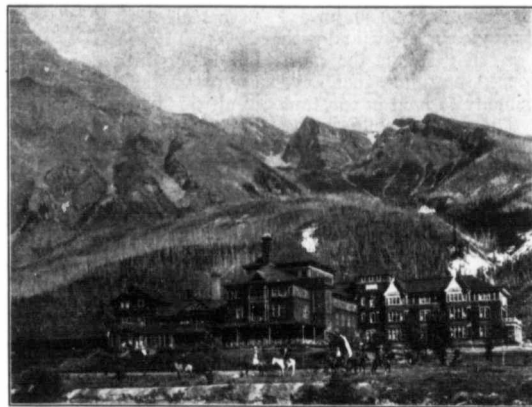
"With nearly thirty years' experience in this business and with increased resources at its disposal, the Canadian Pacific has provided facilities for comfort and recreation which no other similar playground on the North American continent can hope to equal for many years to come.

"The Canadian Pacific Hotel at Banff has a kitchen and dining-room capacity for dealing with six hundred guests at one sitting.

"The Chateau Lake Louise is also built on a generous scale, and it is natural, therefore, that visitors of the highest rank in English and European society, and that

the wealthiest and most exclusive Americans shall be found there every summer. The rates are reasonable, and the tariff for drives and rides has now been fixed by agreement with the Canadian Government Superintendent of the Rocky Mountain Park. At Banff, quite a large village has grown up, with other excellent hotels, catering for all classes of travel.

"On the Crow's Nest route, crossing the Rockies farther south, a pretty and comfortable hotel has been erected by the Canadian Pacific Railway at Balfour, a picturesque promontory on Kootenay Lake. No more delightful round trip could be made than one which included Banff, Lake Louise, Field and Glacier on the main line—then southwards, via Revelstoke and the Arrow Lakes to the Kootenays, making Balfour as the centre for exploration in the mountains and lakes of that exquisitely beautiful region.



Mount Stephen House, Field, B.C.

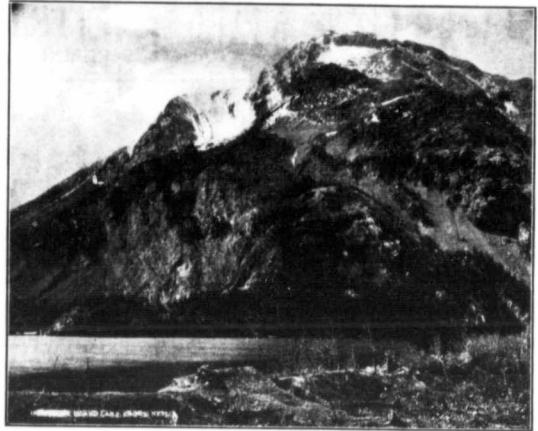
"Through the construction of the Kootenay Central Railway, through the Kootenay and Columbia valleys, it is now possible

on the one hand, and the Selkirk Mountains on the other, is exceptionally picturesque and yet different in character from any other section of the Canadian Pacific Railway.

"The opening of the Kettle Valley Railway (opened this year) has presented other new vistas to those who come to the Canadian Rockies, and makes the fruit-growing districts of the Okanagan Valley accessible from the South as well as the North."

Even in pre-war times it had often been a source of amusement, if not of real concern, to the writer, to fraternize with far-travelled Americans and Canadians in Europe who had spent a tolerable fortune in globe-trotting and who had never visited Yellowstone Park, who had only read of the mammoth cave of Kentucky and who were only familiar with the Canadian Rockies "by name."

In point of fact, any one of



Three Island Lake, Crow's Nest.

to make such a round trip encircled by mountains all the way. The new stretch of line from the Crow's Nest Branch to the main line, at Golden with the Rockies

these astounding products of Nature are of far greater magnitude and significance than anything else in natural phenomena that men know of on this earth, but because of their very accessibility and the fact that the tide of fashion had wholly set in the direction of Europe, they were pigeon-holed with the lists of "common objects of our countryside!"

Now, the probabilities are that they are going to receive the attentions of "fashion" to an extent that might suggest "embarrassment" were it not that the case is one in which overcrowding is impossible. An infinite capacity to receive the attentions of the whole world's tourist army will guarantee any spot of this magnificent world's playground from the invasion of the "maddening crowd."

It is utterly impossible for the understanding to grasp the proportions of this great scheme of Nature, but it can safely be said that however the earth's population may multiply in many generations and flock to the Canadian Rockies, there will be room and lung space for all, and the "crowd" would make no greater impression than two humming birds in a ten-acre park.

If there is one section of the world's great family to which this wonderful corner of God's universe makes an irresistible appeal, it is the citizenship of Canada. Does the average Canadian realize the privilege he holds all the time at arm's length? Does he know how easily, inexpensively and quickly he may reach the finest haven of rest on earth? Has the thought ever struck him that here of his own beloved Canada is something—never more than a few hours from his own domicile—that practically the whole outside world is hungry to get in touch with?



Lake Louise, from Chalet.



# THE CANADIAN THRESHERMAN AND FARMER

CANADA'S LEADING AGRICULTURAL MAGAZINE

E. H. HEATH  
PRESIDENT

E. W. HAMILTON  
MANAGING DIRECTOR

F. C. BRAY  
TREASURER



E. H. HEATH COMPANY, Limited  
WINNIPEG, CANADA



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EDITOR WOMAN'S SECTION

J. L. MIDDLETON  
CIRCULATION MANAGER

Sept.

Corroding Memories

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 be made to us in writing with proofs, not later than ten days after its occurring, and provided, also, the subscriber is writing to the advertiser, stating 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."

IT is not the smallest blessing of a good memory that it has an infinite capacity for forgetting things that are not worth memorizing. Some of the most loving souls in history have made conquest of the hearts of multitudes of men and women by the simple negation of failing to remember certain things. These are the people who forget "insults" and "injuries" very quickly and very completely, and with no less facility do they retain the most perfect recollection of the things that Love lives upon and delights to hold in constant companionship. The merest child knows all about this, and has its own experience of what it means in the cup of happiness.

The satisfaction one feels in the contemplation of pleasant memories does not need to be written about. We all know its potentiality for good, but have we yet sounded the depths of the folly of seeking to perpetuate those incidents and memories which continue to poison the wells of social intercourse in the world? What is the main cause of all misunderstanding and bitterness between men and communities of men but the disposition on the part of

so many to perpetuate rather than to cremate or decently bury their historic feuds? What man ever "got anywhere" in support of anything who went about the business wearing the damning frown of a long-chestered grudge?

John Ruskin said to a bosom friend: "There is no fault or folly of my life that does not rise up against me and take away my power of possession, of sight, of understanding; and there is no past effort, no gleam of rightness or good in it but is with me now to help me." In like manner, nations derive support and strength, or they court weakness and disaster according to the use they make of their past. For example: Where would the American Republic stand to-day if, instead of burying and forgetting them, the American people of a later generation had chosen to preserve in imperishable pickle the miserable details of those wrongs their ancestors suffered at the hands of the English government of the time of George III?

The American family history is no different from that of every other energetic group of mortals, in the sense that it has had its own representatives of that type of mind which is slow to forgive and forget a real or fancied wrong. It has been over-run with all sorts of irreconcilables and self-important vanities, men who will mutiny against every system of government, whose one law is "an eye for an eye." But what have these men produced that is flourishing to-day?

Positively nothing. While the country at times, especially in its great crises, has seemed to be hamstrung by the performances of these men, the *dominant note* has always been to do the right thing, to take the large view, the noble part with the Washingtons and Lincolns, rather than with the political Ahabs and Sinn Fein parochials.

Looking into our own family affairs at the present moment, what is the real cause of all this bad blood in Ireland and Quebec but the poison of festering memories?

That Ireland in the past has been more sinned against than sinning, the most sympathetic student of British history will freely admit, and if the French-speaking natives of Canada will insist on having been the victims of more than one real grievance, they are in a position to produce wagon loads of indisputable evidence in support of their case. But what of it? Just this, that if the erstwhile governors of Ireland and French-speaking Canada have blundered to the extent of crime against these people, will any one seriously maintain that the *dominant note* of the British people is or has been anything lower than to do not only the square thing, but the magnanimous thing by them and every shade of human interest British government touches?

Of all the futile employments on which it is possible for a man to dissipate his energies, that of nursing the memory of his meannesses is surely the most enervating and soul-killing. There isn't a country on the face of the earth that has not a record of accumulated infamy sufficient to sink the Ark of the Covenant itself if the past were to be judged solely on the evidence of its infamies. But the Court of Heaven doesn't judge men and nations on such "lop-sided testimony," and the courts of men are coming nearer and nearer to the standard of the High Court of Heaven every day.

Speaking of actual experience, we have found that ninety-nine per cent of our "grievances" were nothing but the black spotted curtain of our own atrabiliousness! That the greatest moments of our life have been those in which we knew that our estranged friend *saw* that we had forgotten the grudge we owed him and all of whatever had occasioned it. The Kingdom of Heaven is in every man if he will but let it speak, and it is the failure to realize this that accounts for all that we deplore to-day in "Quebec," "Sinn Fein" and *ourselves*.

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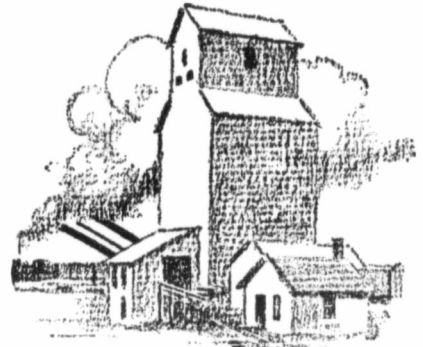
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Advertising rates furnished on application.

# Practising the co-operation we preach



If co-operation between neighbors is a good thing ---and we all know it is---how much more helpfulness in all directions will come from the linking up of two farmer companies, both thoroughly organized and equipped to serve every individual farmer in Western Canada? A great stride in co-operation has been accomplished in the joining of

## The Alberta Farmers' Co-operative Elevator Co. Ltd.

and

## The Grain Growers' Grain Co. Ltd.

These two companies were organized with the single idea that two could buy cheaper than one; that a dozen could sell to better advantage than two; that a thousand could uphold rights better than ten—in short, that co-operation could do these things. This idea as developed by these Companies has made good not only by putting money into the farmer's pockets, but also by making him a better business man.

The two companies have made an equal success in serving the farmers. What was more natural than to make **One Unequalled Farmer Service** of the two?

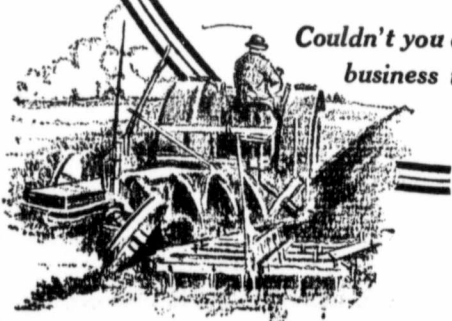
From the standpoint of handling the farmers' crops, the consolidation will mean a big step in greater selling power, owing to the volume of grain handled.

The practical side of co-operation is shown in its most useful form, when it comes to the handling of supplies like implements, farm machinery, fencing, lumber, and other necessities. Here we make one big order out of two smaller ones, one rock bottom manufacturer's price out of two small-order prices—a strength backed by over \$3,000,000.00 assets that demands the highest quality in its goods—and gets it. On the other hand farmers, by clubbing together and getting their orders shipped by the earload, secure a reduction in the freight charges. Here indeed, is practical co-operation.

Live stock can now be sold by the new company through its offices at Edmonton, Calgary and Winnipeg Stock Yards.

Thirty thousand odd farmer shareholders insist that this big business of theirs shall work first, last, and all the time in the interests of all farmers—whether they are shareholders or not.

*Couldn't you confidently trust your  
business to such a concern?*



**UNITED GRAIN GROWERS LTD.**  
WINNIPEG — REGINA — CALGARY

## Carburetion

By E. N. PERCY

**M**OST articles on carburetion either assume that the reader has a technical education; or else are of the purely descriptive character usually addressed to practical men.

However, it seems as though the physical principles of the process could be made clear to the non-technical man provided he is willing to "dig" a little.

There are two main elements that govern the process. One is the capacity of the air to absorb the fuel. The other is the amount of air necessary to burn the fuel. These two functions have nothing whatever to do with each other. In the case of fuels heavier than gasoline, it may happen that the air cannot absorb enough of them for proper combustion, and the mixture is "weak." In the case of very light fuels and improper combustion, it may happen that the air will absorb too much, and the mixture will be "too rich."

The capacity of air to absorb fuel is governed by what is known as the vapor pressure.

The vapor pressure depends upon the principle that liquids are evaporating all the time at all temperatures and pressures. When the temperature of a liquid raises to a point where the vapor pressure exceeds the air pressure, the vapor form bubbles and rises from the liquid and is said to "boil."

The vapor pressure of any liquid is 14.7 pounds per square inch when it boils at atmospheric pressure. The vapor pressure of water is about 14.7 pounds at 212 degrees F., but at 300 degrees F. it is over a hundred pounds pressure. The vapor pressure of gasoline is 14.7 pounds at about 80 degrees F. and continues all the way up to about 300 degrees F. because gasoline is a number of substances instead of one like water.

The laws of gases and vapors are such that they can mix according to their pressures. If the vapor pressure of gasoline is, say, 13 pounds at ordinary temperatures, a saturated mixture would contain 13 parts (by volume) of gasoline and 14.7 parts of air.

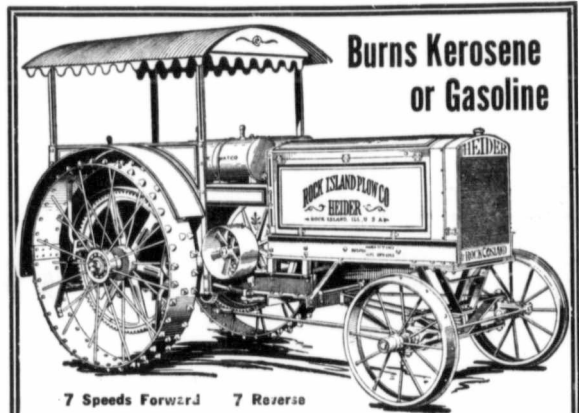
The actual vapor pressure of gasoline is about four pounds at ordinary temperatures of, say, 60 degrees F. This would give a possible mixture of four parts of gasoline-vapor and 14.7 parts of air, by volume. As air runs about twelve cubic feet to the pound and gasoline-vapor about four cubic feet, we have almost a pound of air for each pound of gasoline-vapor. These figures are very approximate, and must not be taken for scientific purposes.

A pound of gasoline-vapor requires about fifteen pounds of air for correct combustion or one hundred and eighty cubic feet. As fifteen pounds of air is capable of taking up nearly fifteen pounds of gasoline, it is evident that there is little trouble in making it take up the necessary amount for proper combustion.

On the other hand, in very cold weather, the vapor pressure of gasoline is so low that it is nearly impossible to get the air to take up enough for an explosive mixture.

The obvious remedy is to warm the air, or the gasoline, or both. If, however, one is attempting to carburet a heavy fuel, such as distillate or kerosene, the fuel vapor pressure may be so low that it is impossible to carburet it sufficiently to get an explosive mixture.

An explosive mixture must contain at least fifty per cent as much air as necessary, and not more than double the right amount, or the mixture will not explode. This is equivalent to saying that there must be not more than twice



Burns Kerosene or Gasoline

7 Speeds Forward 7 Reverses

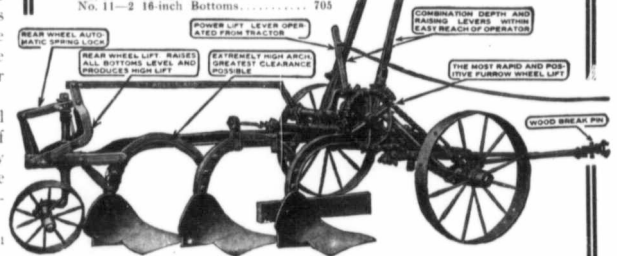
### The HEIDER Tractor Is King of the Light Tractor Class

SIMPLE IN CONSTRUCTION—EASY TO HANDLE—ABUNDANT POWER—GREAT DURABILITY—ASTONISHING VALUE

### ROCK ISLAND PLOWS Work Behind Any Tractor

Number Bottoms and Size	Wt.
No. 12—2 14-inch Bottoms	1009
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No. 12—3d Bot. Att., extra	190
No. 12—4th Bot. Att., extra	190
No. 11—2 10-inch Bottoms	690
No. 11—2 12-inch Bottoms	695
No. 11—2 14-inch Bottoms	700
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2, 3 or 4 "CTX" Bottoms



The power for the power lift is obtained from the wheel which is always running in the bottom of the furrow. This wheel is always on solid ground, and there is positively no chance of slipping when raising the plow.

The clearance, both fore and aft and under the beam, is much greater than the ordinary plow. No chance of clogging in trashy ground.

An exceptionally high and level lift is made possible by our lifting device, giving a swing from high to low of fourteen inches. The clearance above ground is five inches. The bottoms are self-leveling and insure an even depth of plowing. Light draft is secured by distributing the weight evenly over all three wheels.

Write for complete Details and Specifications of this UNIQUE POWER FARMING OUTFIT

## Waterloo Manufacturing Co. Limited

PORTAGE LA PRAIRIE, Man.

REGINA, Sask.



Transport Officer: "Confound it, man! What are you doing? Don't tease the animals!"

## If You Own a Car You Need Dyke's Automobile Encyclopedia

It treats of everything about an automobile—all about repairing your car, with hundreds of splendid illustrations. It isn't what you would call an Encyclopedia in the true sense of the word—yet it is the most complete automobile reference book in the world to-day—any subject, trouble, remedy or repair you can possibly think of, can be found in the 6000 lines of index. REMEMBER—Each and every subject is complete—there are many sub-headings not mentioned, and every subject fully illustrated and simplified. As a motor car owner you cannot do without it. PRICE \$3.32 POSTPAID.

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the necessary amount of fuel present, and not less than half the proper amount, or the mixture will not explode.

Another important point is the effect of temperature on the flow of the fuel through the carburetor nozzle. In the case of water flowing through a carburetor nozzle—four times as much will flow through at 100 degrees F. as at 50 degrees F. With gasoline and kerosene, about the same ratio holds good. Therefore, if a carburetor is adjusted cold, and afterwards warm air or fuel be admitted, the adjustment may be completely thrown out. This is usually compensated for by some sort of hand control.

The temperature and size of the manifolds is another important item. If they are too large, the fuel will condense on the sides while the engine is running slow or under light load; then when it is speeded up the entire raw charge is swept into the cylinder, causing choking, weak explosions, etc. This trouble is particularly noticeable on gasoline hoisting engines and can be a source of great danger, as when a miner is depending on the engine to hoist him out of danger after lighting a blasting fuse.

If it is desirable to have a very flexible engine, easily controlled and governed, the manifolds should be fairly small so as to maintain an average mixture speed of about ten thousand feet per minute at normal load. This is estimated by multiplying the piston speed in feet per minute by the area of the cylinder and dividing the result by ten thousand. The result is the area of the inlet pipe in square feet. This should be reduced to square inches by dividing by 144, and to diameter by dividing by .7854 and taking the square root.

If the manifolds are not jacketed or otherwise warmed, they should be as short as possible, and of equal length to all cylinders; otherwise one cylinder will get a better mixture than the other, and the engine will run irregularly.

If the mixture is warmed up too much, there is trouble with pre-ignition and back-firing into the carburetor. This can be obviated by injecting water; but there are many objections to this, particularly with automobiles. In later articles, we will take up other phases of carburetion in the effort to explain technical points for the benefit of the practical man.

**That Printer Again**

"An electrician at a munitions works came into contact with a copper wire, and 5,500 volts passed through him."

The machine which generated that electricity must have been of exceptional horse-power.

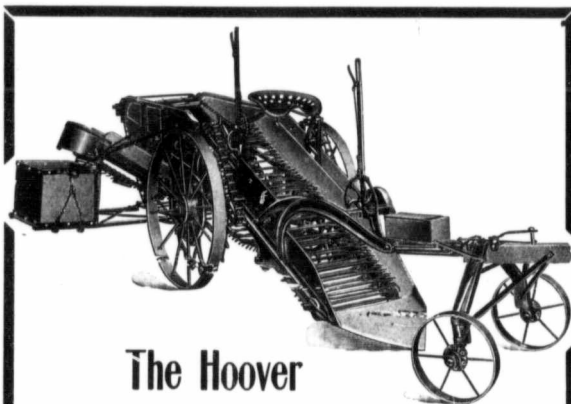
**Another Gasoline Substitute**

"Nuoline," a new substitute for gasoline, which really seems on the surface to be a substitute, was tested out at the West Side Y.M.C.A. Automobile School, 318 West 57th street, New York, recently, with the heads of the Strobbridge and Atkinson schools as observers.

M. Louis Clemont, the inventor, supervised the test, with the help of his associate, Robert Grogan, an assistant in the Secretary of State's local automobile office. A King 8 engine, used for shop instruction, was first used. The gas was disconnected and the vacuum tank drained and then filled with nuoline. Principal H. C. Brokaw pushed the starter button and the engine started on the first turn. To all appearances the new fuel did its work perfectly. The engine ran much smoother than with gasoline, and when the petcocks were opened the explosion was found to be quite as snappy as from gasoline, while the flame was blue, instead of reddish, showing a more perfect combustion. It is claimed that there is no carbon formed by nuoline and that it will burn out carbon formed by the use of gasoline. The engine ran until the vacuum tank was empty and a second trial showed the same results.

Then a Mitchell car was tried out on the road. As before the vacuum tank was disconnected and filled with nuoline. The run was through the park, the car running well after a slight carburetor adjustment had been made and a defective spark plug replaced. One of the tests was up the Round Top hill, which was taken on high gear almost to the top, where the supply ran short. When the vacuum tank was refilled the car started on the steep grade and a few minutes later took the entire grade on high gear. Mr. Brokaw has done this with gasoline with the same car and on the same grade, however, so that no superiority was shown. It was noticeable, however, that the car responded to the accelerator with a zip not shown by gasoline. There was none of the gasoline fumes from the exhaust, but a faint odor of camphor, which was explained to be coal camphor from one of the ingredients used in manufacture of the fuel. During the test there were seven passengers in the car, four of whom might be classed as heavyweights.

M. Clemont explained that the nuoline was really three-fifths water and that the other ingredients were so cheap and so unlimited in supply that the cost would



**The Hoover  
Combination Digger and Picker**

The only machine of the kind on the market. It saves the work of picking up the potatoes from the row. The greatest labor-saving machine ever invented for the use of the farmer.

**WE STOCK**

- No. 332 Hoover Combined Digger Picker.
- No. 330 Hoover Digger with agitating rear rack, kickers and vine turner. This machine leaves the potatoes in a row on top of the ground.
- The Deere shaker digger with fender, fore carriage and wings (for the small grower).
- Potato Sorters.

FREE CATALOGUE FURNISHED.

**John Deere Plow Co. Limited**

Winnipeg Regina Calgary Saskatoon

**The Quick and Easy Way**

With a Cyclone Portable Grain Elevator you can elevate from 1,200 to 2,200 bushels per hour. Never has there been a grain elevator so strong, so easy to handle, or so capacious as this.

**Cyclone Portable  
Grain Elevator**

Lloads tanks, cars and granaries in double quick time. This elevator is operated perfectly by the famous 3 h.p. type "Z" engine. If you already have an engine you may use it, the truck being strong enough to carry engines up to 6 h.p.

Regular length of elevator is 20 feet and when raised to extreme height the outlet is about 17 feet from the ground. Swivel discharge spout is three feet with an additional five feet of flexible extension, extra lengths of which can be furnished.

See your dealer to-day, or write us for full information.



Manufactured by the Hart Grain Weigher Co., makers of the famous "Perfection" and "Hartley" Threshing Machine Buggers.

**The Canadian Fairbanks-Morse Co., Ltd.**

Saskatoon WINNIPEG Calgary



be practically stationary. He thought, perhaps, if the price of coal keeps going skyward it might make a cent or two difference in the price, but with a manufacturing cost of 2½ cents per gallon, not including overhead charges, it will be possible to sell the nuoline at 10 cents a gallon and leave a fair margin of profit.

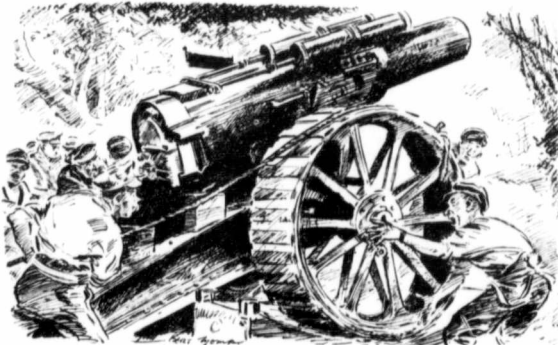
Mr. Grogan said that a road test of 415 miles had just been concluded, a Mitchell car having been run to Albany on the east side of the Hudson, and then to Schenectady and Utica, returning via the west side of the river via Newburg, Tuxedo and the Fort Lee ferry. The average was 11 miles per gallon of nuoline and the performance was said to be perfect for the entire trip. Mr. Grogan announced that a company is being incorporated to manufacture nuoline commercially. The president will be Senator Robert Lawson, of Brooklyn. Associated with him will be Mr. Grogan, M. Clemons, the inventor; Dr. H. O. Lehman and H. Roes, and some others probably will be included in the corporation.

Mr. Brokaw thought the test was hardly exhaustive enough for him to give unqualified approval of it, but said it appeared to do the work of gasoline. The color is about the same as gasoline, but it feels a little more oily, and it seems to run the engine more evenly than gasoline, the explosions apparently being quite as powerful, so that the evenness was not due to lessened propulsing force in the cylinders. He is hoping for further and more exhaustive tests, for he feels that if nuoline really will do the work of gasoline it will solve the most important factor in the high cost of expense of auto operation.

**Wasn't a Ford, Anyhow**

"What kind of a model is your automobile?"

"It isn't any kind of a model," replied Mr. Chuggins, gloomily. "It's a horrible example."



Excited Tommy (as the gun gets into position): "Ere, back 'er down a bit. She's on my fag!"

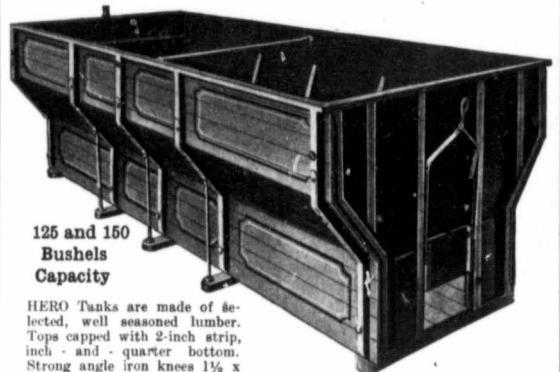
**HEAT INSULATING EFFICIENCY OF MATERIALS**

Study of the results of an investigation of the heat-insulating efficiency of various materials has been made by the United States Bureau of Standards, and although absolute statements would not be warranted at the present stage, certain preliminary conclusions have been stated. In general, it appears that gypsum shows a greater efficiency as a fire-insulating material. Concrete and clay vary somewhat, depending upon their porosity. The denser clays conduct the heat a little more rapidly than concrete. The more porous clays, however, conduct heat somewhat less rapidly than the concrete. The effect of the aggregates on the concrete is not very marked in changing the relative conductivity. There is little difference in this respect between gravel, trap rock, slag, and soft-coal cinder aggregate. Limestone concretes, however, seem to stand out as giving a much lower conductivity. There was found to be but little difference between the behavior of the gypsum specimens furnished by different manufacturers. The dense high-plaster mixtures give much better results than the porous low-plaster, high-water mixtures.

Many a man has been surprised to be told that he saws his whiskers off. Yet this is exactly what he does when he shaves. Examination of the edge of a well sharpened razor, under the microscope, shows not a smooth edge, as was once supposed, but a series of more or less regular teeth. This saw-tooth edge, says E. R. Gross, of the Colorado Agricultural College, is the junction between the two surfaces of the blade and cannot be avoided.

If this is the condition on a highly polished razor blade, continues Mr. Gross, what enormous hills and valleys must one expect to find on the surface of the ordinary polished bearings used in machinery and motors. These

**Hero Grain Tanks**



**125 and 150 Bushels Capacity**

HERO Tanks are made of selected, well seasoned lumber. Tops capped with 2-inch strip, inch- and quarter bottom. Strong angle iron knees 1½ x 1½ x ¼ inch. Lined with hardwood. Angle iron joint between sides and bottom ensures flax-tight construction. Braces are adjustable to overcome sagging—an exclusive feature. Large stock on hand.

If your dealer does not carry this line write direct to

**Hero Manufacturing Company, Limited**  
WINNIPEG (Under New Management) CANADA

**STOP!**

**LOOK HERE!**



**Mr. Farmer Merchant and Country Butcher:**

We are in the market to pay you the highest market prices for your Hides, Sheep Skins, Wool, Seneca Root and Raw Furs, and guarantee you honest assortment for anything you may ship us and prompt returns assured. Write us for prices and shipping tags and any other information gladly furnished on request. At your service. Come, ship us a trial shipment and be convinced. Upon request we hold goods separate for your approval of our valuation.

**NOTICE—SALT ALL HIDES WELL IN WARM WEATHER.**

**The B. E. Hogan Hide and Fur Co., Limited**  
Local Phone Garry 4051 362 Pacific Avenue, Winnipeg, Man.  
Long Distance:

**Johnston's Granary**

**Handy. Rigid. Safe.**

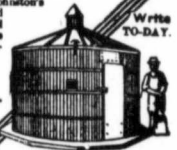
Protect your grain from fire, lightning and rodents. Set up a Johnston's Granary—metal covered and tight as a drum. The grain can't bulge the walls. You can place it where it will be handiest; and move it from place to place if necessary.

**METAL DOOR—LOCKED JOINTS**

Johnston's Granary is protected from 4-legged thieves and from fire by galvanneal iron walls with locked joints. Iron bands with tension bolts hold the walls against bulging. The door is iron covered, inside there is a sectional door to hold the grain. The sections of the roof hook together and offer a solid metal resistance to wind, water and snow.

Grains cannot heat or mildew. A 14-inch galvanneal ventilator provides plenty of air. Johnston's Granary is fitted at our factories and shipped ready to set up. Full details on request.

**DINNER GRAIN UNLOADER.**  
Can be used anywhere on the farm. Send for literature and prices.  
The Metal Shingle & Siding Company, Limited,  
Winnipeg, Man.



TURN TO OUR **Startling Contest**

ON PAGE 42C

There's a New Ford Car in it for YOU



rough surfaces, rubbing together, produce friction, which reduces the efficiency of any machine. Roller or ball bearings overcome friction to a considerable extent, but there are places where they cannot be used. In these cases oil takes their place. Oil actually works very much like ball bearings, the two sliding surfaces rolling over little globules of oil.

Just as in the case of ball bearings, the little globules of oil finally become "chipped" so that they no longer roll easily. When this time comes it must be renewed. Oil that has become black from use has left only a small percentage of its lubricating qualities.

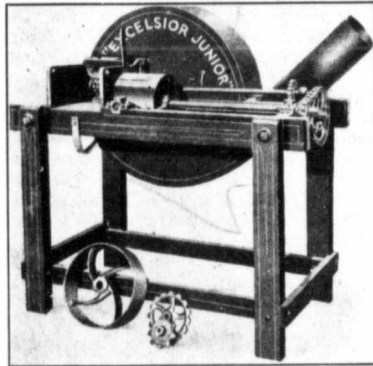
The best grades of oil are most resistant to the destructive agents, heat, friction and wear, which causes it to deteriorate. For most uses, a cheap grade of oil costs more in the end than a good grade. Even the best grade must occasionally be replaced. Probably the hardest task oil is called upon to perform is to lubricate the piston and cylinder of an engine which are exposed to the intense heat of burning gases. For this purpose the oil cannot be too good.

**How Much Waste in Meat?**

Meat as bought on the market contains bones or other waste. From this it is plain that the price per pound does not really tell the real cost of the edible meat.

L. D. Hall and E. D. Emmett, made a study of this problem at the University of Illinois. They found that round steak had the least waste. It averaged three-fourths lean meat, rump roast averaged one-half lean meat, rib roast a little over one-half lean meat; sirloin steak about two-thirds lean meat; porterhouse steak slightly over one-half lean; pot roast two-thirds to three-fourths lean. It has also been proved that meat from these different cuts is equally nutritious. From the standpoint of nutrition and economy it will pay to use the cheaper cuts and to select the ones that have the largest proportion of lean meat.

What is the value of a pine tree? The answer depends upon how it is treated. Prof. Duncan declares that a pine tree when standing is worth ten dollars a ton; if cut in strips its value is increased to fifteen dollars a ton; when boiled into pulp it may be sold for forty dollars a ton or more and when bleached another fifteen dollars must be added. But this is not all that may be done. If turned into viscose and spun into silk its value becomes five thousand dollars a ton.



**Feed Your Stock Right**

Feed cut with Watson's Excelsior Junior Blower Feed Cutter means more beef on your steers, and more milk from your cows. The Excelsior Junior will exactly meet your requirements. Strong and well built, it cuts three' lengths, 1/2 inch to 1 1/4 inches by changing gears. It is perfectly tight with hood underneath. Equipped with 9 inch throat, two concave knives of best English steel specially tempered, 6 inch stovepipe connection, and 12 inch by 4 inch pulley. One lever in easy reach of operator, enables him to instantly stop, start or reverse feed rollers, while machine is running at full speed. The Excelsior Junior can be run by gasoline engine, sweep horsepower, or by hand. Cuts and elevates up to half a ton per hour.

**WATSON'S POLE SAWS**

Are complete and ready to saw all the wood in sight. Built on a firmly braced, rigid hardwood frame, with three 5 inch by 6 inch pulleys; solid, heavy fly wheel, hanging well clear of poles and a perfectly tempered blade of flawless steel. Write us for further information, also ask us about any other Watson lines.

**Watson's Ideal Sleighs**

Have special features that other makers recognize but can not employ because of our protecting patents. We guarantee that our sleighs are lighter draft and keep the road better than any other sleigh made.



311 CHAMBERS STREET WINNIPEG

**Watson's Ideal Sleighs**

Front bench has a patent truss that makes for long life. Shoes have a "rock" where the greatest weight of the load falls.

Watson's sleighs are made for hard usage—they stand it. Send for catalogue and prices.

**TRAPPERS HUNTERS FISHERMEN CAMPERS BE PREPARED**

**HAVE FISH IN CAMP**

A Gill Net will supply them only 20 cents per yard, mounted with leads and floats ready for the water, five sizes of mesh, stretched measure desired.

**Sportsmen—**

We carry a stock of Marble's Sights, Hunting Knives, Axes and other specialties, also Acetylene Headlights, Camp Lamps, Lanterns, Collapsible Camp Stoves, Gentlemen's Shoes, Packs and Boots, Tents, Pack-sacks, Sleeping Bags, Dunnage Bags, Compasses, Raincoats, Rods, Reels and Fishing Tackle of all kinds in fact, almost everything you require in the camp or trap line.

**Fishermen—**

We can supply you with Hoop, Brook, Trammel, Gill, Pound and Dip Nets, Seines, Lines and other Fishermen's Supplies at very close prices.

Write to-day for the new 1917-18 EDITION OF HALLAM'S TRAPPERS' and SPORTSMEN'S SUPPLY CATALOGUE, 32 pages, illustrated, which we will gladly send you free on request. It will save you money. Address in full, using number.

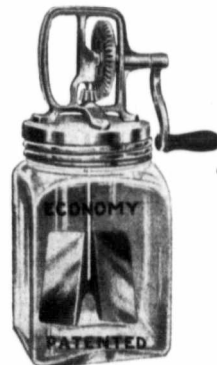
As the factories are busy turning out supplies for the Allies, many will be disappointed this year in securing their favorite rifles, ammunition and supplies, so order early before the other fellow has picked up the goods you want.

**TRAPPERS—WE CARRY IN STOCK THE LARGEST ASSORTMENT OF ANIMAL TRAPS IN CANADA.** No trappers' outfit is complete without a supply of—

- Hallam's Animal Bait \$1.00 per bottle or Six Bottles for \$5.00.
  - Hallam's Muskrat Bait
  - Hallam's Trill Scent
- as they will largely increase your catch of fur.



917 Hallam Bldg., Toronto



**Down Goes the Cost of Butter**

Advancing prices and war conditions necessitate increased incomes in many homes. Hence the reason every woman on the farm will appreciate an

**Economy Churn Free**

This churn is proving a boon to thousands of farmers' wives, who do not, or have not the time to make butter to sell on the market. With an Economy Churn you can save twenty cents on every pound of butter you buy. This family churn makes

**Two Pounds of Delicious Table Butter from One Pound of Ordinary Butter, plus One Pound (Pint) of Sweet Milk**

**Write us to-day and let us tell you how you can earn the CHURN FREE**

And this table butter will keep as long, go as far, tastes better, and costs at present prices of butter and milk

**TWENTY-TWO CENTS A POUND**

**E. H. HEATH CO. LTD. - Winnipeg, Man.**

The Quality Why

**BUY YOUR LUMBER DIRECT**

FROM MILL TO CONSUMER

MILL **F.M.T.C.** CONSUMER

**BUILD NOW. DON'T DELAY**

FARMERS, you can now better afford to do your building than ever before, as our prices on lumber are lower than charged you by the Retail Dealers before the war, while prices on all farm produce are fetching top prices. We can save you from \$8.00 to \$12.00 per 1000 feet. Read what our customers say.

Emanuel Gill, Irvine, Alta., writes: "The lumber you shipped me suits me just fine, and I am highly satisfied. I saved from \$10.00 to \$12.00 per 1000 feet by buying from you and received much better lumber. I wish to thank you for your prompt service."

David L. Wilson, Carnouatie, Sask. (Club Order), writes: "We were well pleased with the lumber you shipped us in C.P. 140648, and saved at least \$200.00 on the car. The price they charge here is \$6.00 to \$10.00 per 1000 feet more than that we paid you. The way the lumber was put up in the car was just fine, and we had not the least bit of trouble in keeping the orders separate. The shipment arrived in splendid time."

Why pay middlemen's profits when you can buy the highest quality lumber, shingles, lath, doors, windows, etc., direct from us at first cost prices? We make a specialty of club orders, and mark and invoice each order so there is no confusion. We allow suspension before payment. FARMERS, CONTRACTORS, SECRETARIES, write for our terms and prices delivered, freight paid, in your nearest station. Place your order with us. We can give you prompt shipment.

**The F.M.T.C. LUMBER CO.**  
STANDARD BANK BLDG. VANCOUVER B.C.



In this Ottawa house Bishopric Stucco Board was used as foundation for all interior plaster, and for stucco on exterior walls.

You really do four jobs at once when you nail on

**BISHOPRIC STUCCO BOARD**

It takes the place of (a) sheathing lumber, (b) building paper, (c) furring strips, and (d) lath—and gives better results than all four together.

Bishopric Stucco Board is made of heavy sheets of Asphalt Mastic, surfaced on one side with sized fibre-board, and reinforced on the other with bevel-edged lath, imbedded in the Mastic under heavy pressure. It comes in rolls or sheets 4 feet wide and from 4 to 25 feet long, ready to be nailed, lath side out, direct to the studding.

The Stucco or Plaster makes with it a perfect bond, securely keyed in the dovetailed spaces between the lath. As it does not squeeze through nor fall down behind, far less plaster is required, and the finished job will not crack, crumble or fall.

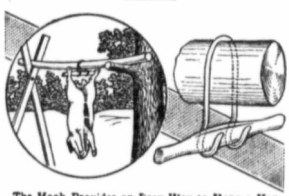
The saving averages nearly 50% over an ordinary stucco wall. Is this not worth serious consideration? Write for sample and full information to

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**CLIMATE AND FERTILITY**

Canada's Winters Conserve the Fertilizers in the Soil

THE influence of climate on fertility is frequently overlooked, but it has a more or less direct bearing on the fertilizer question in Canada. It is realized by few that climatic conditions—rainfall, temperatures, etc.—exert a profound influence on the nature and composition of soils, both in their origin and in the power to conserve their fertility. These influences may tend to the accumulation or the dissipation of those elements or soil constituents which make for fertility. In this regard, save our coastal lands with excessive rainfall, which may keep the lighter soils poor in available plant food, our country is singularly blessed. We cannot now elaborate this question, but one instance may be cited that may serve as an illustration—one which undoubtedly influences in a beneficial way the fertility of our soils. The rigorous winter that prevails over the greater part of Canada locks up for several months—practically from harvest to seeding time—the soil's fertility. The plant food that has been converted into available forms during the preceding summer and autumn, and which is left over after the season's growth, is conserved for the crop of the succeeding year. The frost holds tight within its grass plant food of untold values—especially the more valuable nitrates, so necessary for stimulating the growth of the young crop. In regions enjoying a more open winter, this soluble plant food would be lost by leaching. With all their drawbacks, our severe winters, with their almost continuous low temperatures, must be regarded, in their role as conservers of fertility, as an agricultural asset of no small value, one which must profoundly affect in a beneficial way our dependence upon purchased fertilizers for satisfaction.—Dr. F. T. Shutt, at Eighth Annual Meeting of Commission of Conservation.



The Hook Provides an Easy Way to Hang a Hog after the Gambrel Is in Place

**A Gambrel Hook**

Farmers use a pole to hang the hogs on at slaughtering time in winter. On this pole a gambrel stick is placed, the ends being inserted in the hock of the animal's leg. It is always a hard job to do

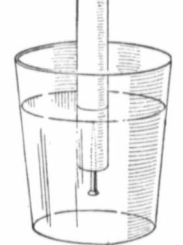
the hanging and place the gambrel stick at the same time. A better way is to provide a double hook of metal, heavy enough to support the animal, and hang the gambrel stick on this hook, as shown. The metal may be square or round, bent into a U-shape of such dimensions that it will fit over the timber used in hanging the hogs and with a hook formed on each end. It is an easy matter to insert the gambrel while the hog is lying on the work table, then lift it by the gambrel and place the latter on the hooks.



A Trapdoor Handle

Wishing to have a handle for a trapdoor that would not be above the floor level, I made one as shown in the sketch. A 3/4-in. hole was bored, about 1/8 in. deep, in the door where the handle was to be placed. In the centre of this hole another was bored, large enough to permit a chain, 5 in. long, to slip in it. On the upper side a button, such as used on uniforms, was secured to the chain end, and on the under side a weight was hung. The door is easily dragged up by lifting the button and grasping the chain.

A SAFE CANDLE HOLDER



**Glass of Water as a Holder for a Candle**

In the country where neither gas nor electricity is available, it is often necessary to use a candle for illumination. If it is desired to light up a corner or part of some mechanism and both hands are to be used, a simple holder for a candle can be improvised by inserting a nail in the lower end of it and placing it in a glass, three-fourths full of water. The candle will rise gradually as it is consumed, and no tallow will be spilled on the lighted object.

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## Gas Tractor Engine Capacity and Design

By C. E. SARGENT

THE size of the engine compared to the weight or capacity of its tractors is so variable for not only different designs of tractors but often for different sizes of the same design, that a discussion of the proper size of engine for a given tractor seems desirable both for the purchaser as well as for the manufacturer.

It was not many years ago that when a larger electric generator was required, it would be built, tested and its rating obtained from the test output before its capacity was filled in on name plate, and the tractor engine situation seems almost in the same category.

There has been recently an inclination to furnish larger engines than formerly and the reasons given, which would seem logical if not thoroughly analyzed, are that more belt and draw bar horse power can be developed. In buying a tractor, the purchaser is inclined to prefer the tractor with the larger engine, other things such as weight, draw bar pull, etc., being equal, little realizing that from the standpoint of efficiency too large an engine is worse than one too small.

As the steam engine was the prime mover in the first commercial tractors (in those days they were called traction engines) there has been a tendency of manufacturers to rate the internal combustion or gas engine in the same way and the operator to expect an overload capacity.

In order to thoroughly comprehend the difference between the two types of prime movers, the steam and gas engine, or the external and internal combustion engine, let us consider the cycle or operation of each. A steam engine is rated at its most economical load, which is one-fourth cut off at say 100 pound boiler pressure. Running at this rating, steam at say 100 pounds pressure is admitted to the cylinder until the piston has reached one-fourth of its travel, when the steam is cut off and, on account of the admitted volume of steam expanding as the piston continues the stroke, there will be an average or mean pressure of 50 pounds.

Now if, instead of cutting off the steam at one-fourth stroke, it is admitted full stroke of the piston, the average pressure will be 100 pounds, the horse power will be doubled and the steam consumption, will be four times as much as at rated load.

Then again, if the boiler pressure is raised to 150 pounds, the

horse power output is raised fifty per cent so that a steam engine whose economical rating is say 10-horse power will have a possible output of 30-horse power when desired, but with a greater consumption of fuel per horse power output than at rated load.

A gas engine when rated at its most economical load is rated at all the load it will develop at which a full cylinder of gas and air is taken in during the suction or induction stroke. As we cannot increase atmospheric pressure, which corresponds to the boiler pressure used in a steam engine, we cannot get more heat units in the gas engine cylinder—therefore we cannot get an overload from a gas engine and the fuel consumption per unit of output increases rapidly as the load gets lighter, as hereafter explained.

In order to thoroughly diagnose the relation of engine capacity to load, let us consider the operation of the ordinary internal combustion engine—a type used on ninety-nine per cent of the commercial tractors.

When a cylinder full of combustible mixture or gas is compressed, fired, expanded and released, full power of the engine will be developed—and a characteristic of this type of engine is that under such conditions more heat is turned into work than at any other load.

Of course, more than full load cannot be obtained, because if the cylinder is full of gas before compression no more can be drawn in, so the average pressure after ignition within a cylinder cannot be increased.

There are several reasons why a gas engine at full load will furnish more power per pint of fuel consumed than at lesser loads, the most important of which is that the higher the compression the greater the amount of heat turned into work. Diesel engines compressing to 500 pounds deliver a horse power with about one-half the fuel used by a tractor engine.


In order to prevent standard truck or tractor engines from running too fast with a reduced load, the amount of gas drawn in during the suction stroke is limited by a hand or a governor controlled butterfly or throttling valve, reducing the compression pressure and the efficiency, and at the same time putting a back pressure on every piston by

Continued on page 15

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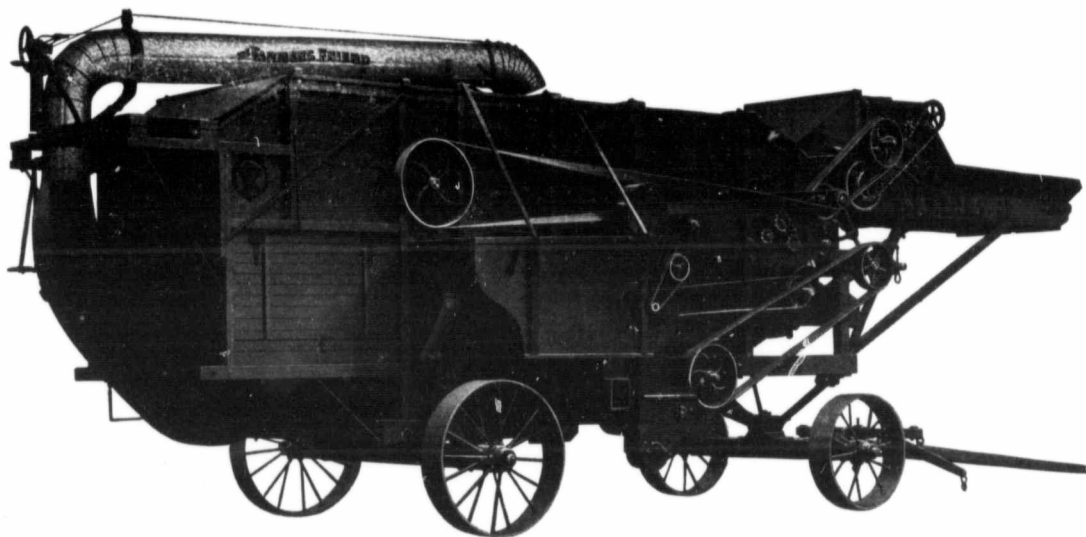
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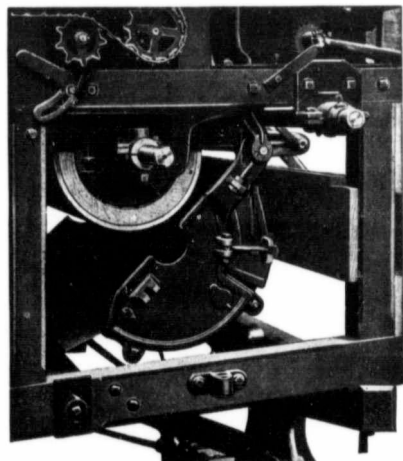
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The Swinging Concave Bracket admits of easy access to the hulling cylinder. This bracket can be adjusted to permit any degree of rubbing desired.

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We could tell you a lot more about the Matchless and its construction, but space will not permit, so write, wire or 'phone, for full particulars.

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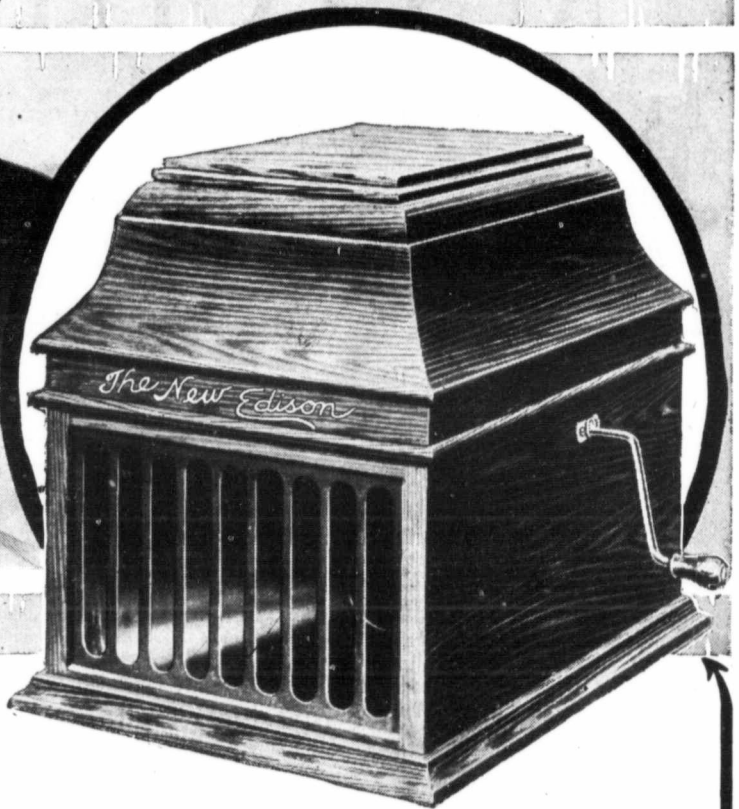
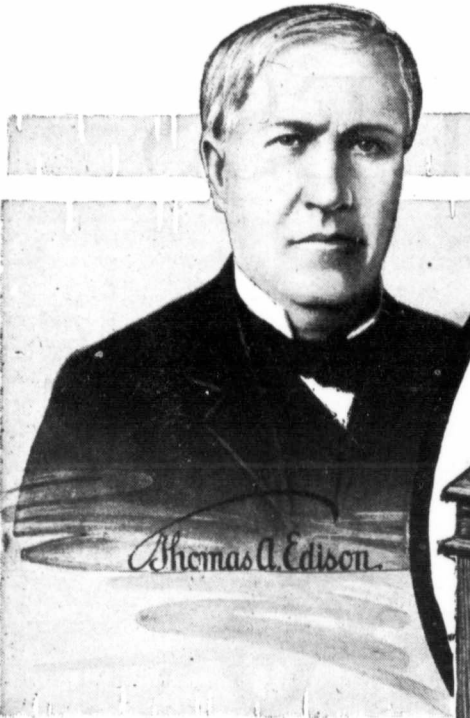
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making a vacuum pump of the engine.

If the engine is running at normal speed without load, sufficient gas will be required to not only overcome the mechanical friction but enough more to compensate for the loss of heat through low compression and the back pressure, which often amounts to 10 pounds per square inch of the piston area, or in a four cylinder engine, a continuous drag of 125 pounds—in reality, a brake which keeps the engine from running too fast. At full load this braking action or back pressure disappears and gradually increases as the load gets lighter. A tractor operator desires to convert as much of the fuel as possible into useful work—therefore it is necessary to keep a gas engine approximately at full load at all times.

As the draw bar pull is far from constant, varying in different soils as much as one hundred per cent with the same size and number of plows, the proper engine capacity with its inherent limitations is a most difficult engineering problem. If a tractor has but one forward speed or one ratio of speed between the engine and bull wheel, then its engine must be sufficiently large to pull the maximum load and will have twice the power and consequently, a low efficiency during the average work performed.

Assuming for a standard of comparison that the transmission ratio and friction losses are the same for all tractors of the same weight and the plowing speed is two and one-half miles per hour, there would be required from 1,500 to 3,000 pounds draw bar pull to operate three fourteen inch plows. Therefore, the engine of the one speed tractor, sufficiently large to pull the maximum load, will be but half loaded with the minimum pull and the fuel consumption per acre will be excessive. With a single speed tractor this size engine is essential.

If a tractor has a plowing speed of two and one-half miles per hour and an engine, that when operating at maximum efficiency will pull the average minimum load, the same engine through a speed change will pull twice the load at half the speed and use a minimum amount of fuel per horse power output. On the same principle, several speeds in a tractor will enable the operator to run the engine at a maximum efficiency most of the time.

When plowing was done by oxen and then by horses, plows were designed to do good work at the speed of the team that pulled them. And as tractors are designed to take the places of horses they are, of course, given



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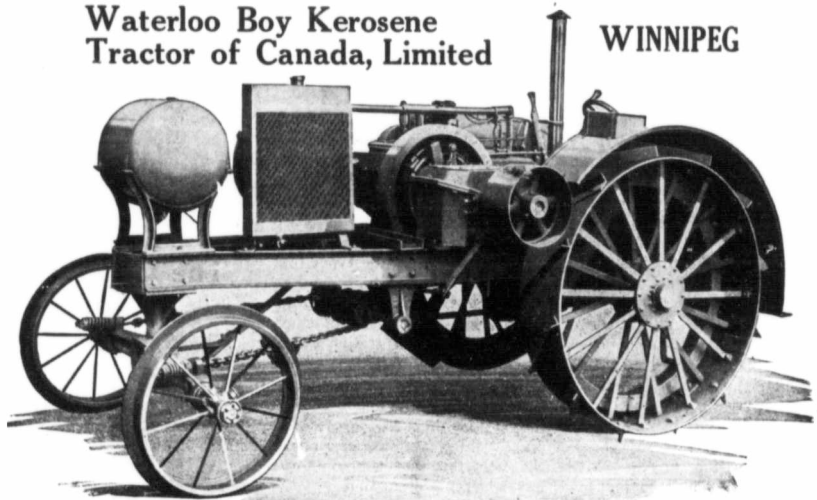
Every Waterloo Boy Tractor on the farm conserves hay and grain. It excels in all farm work where power and strength are required. Anyone can operate it. And it requires feed only when it is earning money for you.

It burns **Kerosene**—the cheapest fuel. Kerosene gives more power than gasoline—while the price of gasoline is going up. You'll make no mistake if you invest in a **Waterloo Boy Tractor**. It is the greatest power plant of them all—power for all farm jobs.

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WINNIPEG



the correct speed to fit the speed of the plow, which has not been changed.

No doubt some enterprising plow concern will bring out a tractor plow which will have such a mouldboard curve that a speed of five or more miles per hour will do as excellent work as the present plow at half the speed, but as long as tractors have to draw plows designed for a horse's walking gait they are limited to a maximum and minimum speed—therefore it would be impracticable to have a gear ratio that would permit of plowing so slow or fast that the earth would be improperly turned.

If a plow must run the speed for which it is designed, then a change of ratio should be accompanied by a change of engine speed to get efficiency and satisfactory plowing as the pull on the drawbar changes with the soil. A satisfactory governor to accomplish such results has never yet been furnished and it is doubtful if the complication of such a system could be overcome.

We see then that while the internal combustion throttling engine is in many ways adapted for driving tractors, it seldom works at its most efficient load. With the price of gas going up and the necessity of a high efficiency in

tractor operation, it behooves the manufacturer to substitute, if possible, the throttling engine with a design which will show a greater efficiency through a wide range of load.

An engine of the Diesel type has no back pressure from the wire-drawing of the induced air and varies its mean effective pressure by varying the amount of oil injected. Such an engine has practically the same thermal efficiency during its whole range of load and would, in the writer's opinion, as it burns fuel oil to perfection, solve the problem of tractor power.

## From Chaos to Order in Small Tractor Design

By F. A. VALENTINE

MUCH has been written, much will be written about the tractor, its development and future. Many of the articles have been written by men who know, and are full of hard sense, but many others of nonsense, and perhaps this article will belong to the latter class; however, the writer feels qualified to write intelligently as he has had long experience both in the manufacturing and sales end of the tractor business, but let the reader be the judge by what follows.

Who killed "Cock Robin" in the large tractor game? Two causes contributed but the one that contributed by far the largest share was the greed of the manufacturers for quick profits which resulted in the placing on the market crude, and in many cases untried machines.

This same condition confronts the future of the smaller tractor, and the writer could mention names and refer to several cases in point. The small tractor has limitless possibilities if safe and sane methods are used by those who are designing and preparing to place tractors on the market, and if not the results will be in a way the same as in the case of the large tractor, but with this hopeful feature, that the purchaser will not be stung to the tune of from \$2,500 to \$3,000 so that he may recover and come back. We sincerely hope that this condition will not prevail for it is too great an industrial possibility to spoil.

At this writing the small tractor is in absolutely a chaotic condition relative to design, number and location of the drive wheels, type of motor; in fact, nothing is standard with any

other machine except in minor details.

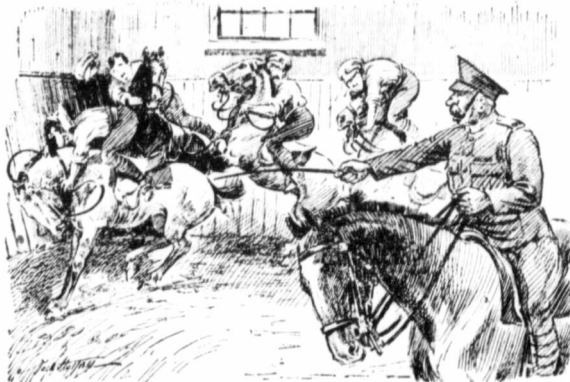
Let us briefly at this point enumerate, and consider some of the tractors either in the process of building, or already on the market, and I am in position to write intelligently, as I am located in the gas tractor centre of the world, as this city (Minneapolis) has shipped, and is shipping, more tractors than any other city, or perhaps all others put together.

There is the regulation four wheel type with differential, both rear wheels driving; the four wheel with one wheel driving, eliminating the differential; the four wheel machine with all wheels driving. This covers the four wheel machines.

Then we come to the three wheel type which far outnumbers all of the others at the present time, and are of four classes: One wheel driving either in the furrow or on the land; two wheels driving with guide wheel either front or rear, making two in this class. Then we have the truck type, as it may be called, with automobile steering gear and one wheel in the rear as the driver. There is still another class, the caterpillar, of which there are two types, single and double creeper.

This only covers the types that have been actually built, and in most cases quite a number sold, and excludes a lot of freaks which if Barnum were still alive would be in captivity, under tent with the white elephant, to which class they belong, as the buyer finds to his sorrow but too late. This gives a fairly accurate canvass of the situation that confronts the buyer at the present time.

Conditions are very much the



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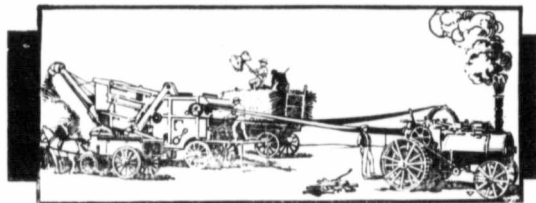
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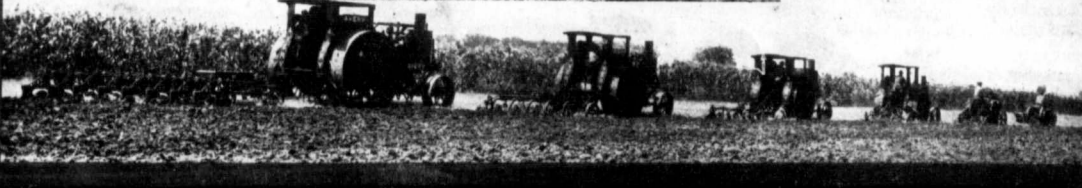
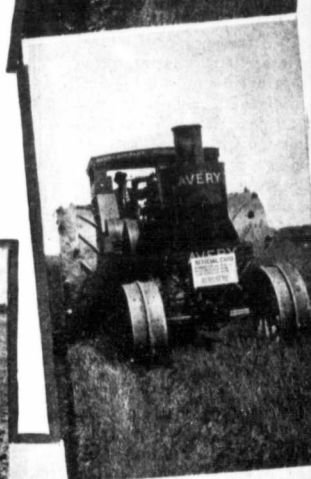
The rules were that a tractor which burned kerosene was allowed only 5 per cent as much gasoline as kerosene for starting. Avery Tractors not only burned kerosene but no more gasoline was taken by any Avery Tractor during the entire week than the amount allowed for the first day's filling of kerosene. And just to show that Avery Tractors would do even more, two sizes were run on distillate.

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same as obtained relative to the automobile ten years ago, but automobiles are now standardized, until the situation that confronts the possible buyer of a machine is one largely of the number of cylinders, the number of passengers it will carry, the kind and color of the upholstery, and, lastly but not least, the amount that he has to spend.

Would that such a happy condition of affairs existed in the tractor field at the present time. What a relief it would be to all concerned. It does not seem very likely to obtain very soon for tractor manufacturers do not seem to be gregarious in their habits, or to realize that they have a community of interests that needs safe-guarding, which will create an industry that will be second only to the automobile.

Something has been started along this line by the organization of a society of traction engineers, but unfortunately as yet it has borne no fruits, and for the reason possibly that each of its members is so busy getting out his individual type of machine that he is sure to be the standard of the future.

Now this is somewhat of a deplorable condition, although not a hopeless one, but in the writer's opinion exists at the present time, and tractor man that I am, when asked by a prospective purchaser what make to buy, candidly I am at a loss what machine to advise, for none at present combine enough of the essential features.

What of the successful tractor of the future, and what are some of the qualifications? In the first place, it must be as nearly dust proof as possible. An enclosed transmission with roller bearings, cut steel gears with two and preferably three speeds forward. The motor must be of a heavy duty type, with plenty of reserve power to carry its heaviest load. The light high speed automobile motor cannot measure up to the requirements of the tractor for the reason that on the average the automobile motor does not have to deliver over twenty per cent of its rating, while the tractor is using at least ninety-five per cent plus. They are not any more interchangeable than the heavy dry horse and the light driver. Neither can do the work of the other with any measure of success, for the kind of work each is required to do is of an entirely different nature.

All unnecessary weight should be eliminated by the use of cast and structural steel, as every additional hundred pounds requires power to transport it that can be applied to the draw bar where needed. Contrary to the generally accepted idea, weight in a tractor within certain limits is not

necessary the same as in a locomotive where the increased horse power demands a proportional increase in weight to give it the necessary adhesion to the rails, while a tractor only needs sufficient weight to hold the lugs firmly in the ground, and any additional is excess baggage, a positive detriment, packing the soil, and increasing the fuel consumption.

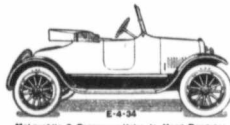
In summing up, the tractor of the future must be high grade in every particular and will of neces-

sity command a price commensurate with first class workmanship and material. It may have one or more drivers, a two or more cylinder motor, but it must come up to the standards as set forth in the preceding.

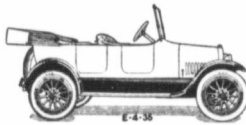
Few machines as yet have been placed on the market that measure up to this high standard, although some manufacturers see the need and are trying to meet this demand. The writer is in position to state that such machines will be built and obtainable

in the near future, and when they do all of the old type will go into the discard where they belong. They have served a useful purpose, however, for they have taught the farmers the possibilities of the medium sized tractor, and the manufacturers that nothing but the best can survive, and that he must raise all of his standards above any practice that has produced satisfactory results relative to a farm machine in the past.

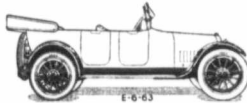
# Announcing New Series "E" McLaughlin Leaders in All Points of Merit



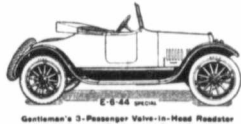
McLaughlin 2-Passenger Valve-in-Head Roadster  
E-6-34



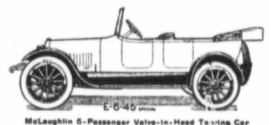
McLaughlin 3-Passenger Valve-in-Head Touring Car  
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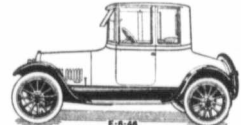
McLaughlin "Light Six" Valve-in-Head Touring Car  
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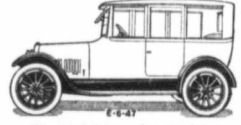
Gentleman's 3-Passenger Valve-in-Head Roadster  
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McLaughlin 5-Passenger Valve-in-Head Touring Car  
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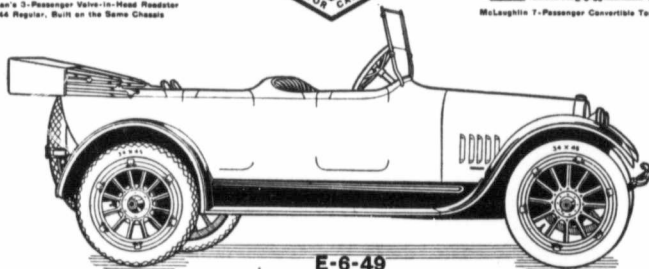
McLaughlin 4-Passenger Valve-in-Head Touring Coupe  
E-6-46



McLaughlin 6-Passenger Convertible Sedan  
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McLaughlin 7-Passenger Convertible Touring Sedan  
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Dry cells are properly named as far as outside appearances are concerned, there being no moisture of any kind visible. They can be used in any position, on their side or on either end, although it is claimed they will last longer when used in an upright position; that is, with the binding posts on the top. These cells consist of an outside shell made of sheet zinc, made in any form or shape to fit the place in which they are to be used. In the center is a carbon post which runs almost to the bottom of the zinc shell. Around this carbon or center post is packed the chemicals which are to furnish the electricity. The top for about half an inch is sealed over with sealing wax or tar, or anything that will seal it tight and prevent moisture either entering or escaping from the zinc cylinder. The current is produced by the chemicals within destroying the zinc on its inside surface. These batteries have wonderful recuperative powers; for instance, when you stop your engine in the evening the batteries may be almost lifeless, yet in the morning

## Batteries and Magnetos

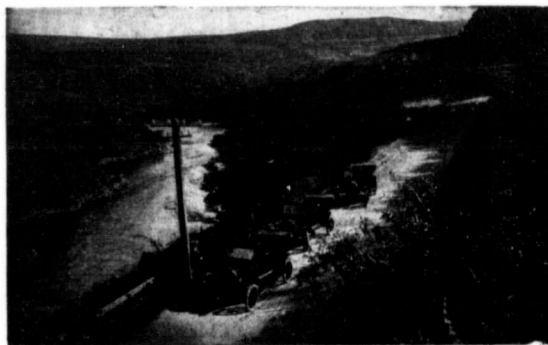
be good for another day and be used from day to day after they are thought to be almost worthless. Dry batteries will last longer when used a little each day than when allowed to stand without use. In fact they will deteriorate while stocked in a store almost as rapidly as when in use. For this reason you should require batteries tested at the time of purchase. This test can be made by a simple instrument commonly called a battery tester.

the scientific name of which is an ammeter, or a combination of ammeter and voltmeter. The merchant will know what you mean if you tell him you want a battery tester. A dry cell which is perfectly dead may be revived for temporary use by drilling two or three holes through the shell on top and pouring into these holes as much vinegar as will soak in. These holes should again be sealed with sealing wax and a wire passed from one bind-

ing post to the other for a couple of minutes when your battery will show temporary life. This is only resorted to as an expedient, but is not profitable, but will help out an emergency at times.

Wet cells are such as are commonly used by any telegraph operator, who will be glad to explain them and assist you in the proper construction of a wet battery. It may consist of from one to any number of cells, according to the strength of current desired. This type of battery consists of a glass or glazed earthen jar, which will hold about a gallon of water. Into it is inserted a zinc and a copper post, which can be purchased from any electric supply store, in the shape of a crow's foot. The chemicals consist principally of rain water and blue vitriol. A little sal ammoniac is also used. The electricity in this battery is also produced by the destruction of the zinc by the chemicals. The copper will also be destroyed in time, but not so rapidly.

If you have a clean, dry place in a basement where the water in these cells will not freeze, and where you can get at the cells occasionally for the renewal of the water, chemicals, and crow feet, you will have a battery which will give you good service



Motoring in Alberta

and at a minimum cost. It is necessary to attach a wire from one binding post to the other, short circuit it as we call it, to start it working properly and quickly.

The storage battery is coming into common use now for ignition purposes and is very reliable when understood, and where means are at hand for recharging. The recharging of these batteries is rather a delicate proposition and would require too lengthy an explanation for this article. Besides, every storage battery goes out with a book of instructions, and the man who charges it for you will give you all the information you may desire concerning them.

The current from an electric lighting system is sometimes used for ignition purposes, and works nicely and is very economical after being installed, but is rather expensive to instal, on account of the attachments necessary to use this current safely.

The magneto is coming into its own very rapidly for ignition purposes, especially since self-starters are in general use on heavy engines, which will give them speed enough to cause the magneto to give a spark of sufficient intensity to start the engine. There are numerous different types and makes of magnetos, but we will deal only with the various types in reference to their construction, such as direct current, alternating current, high tension, low tension, and the non-rotating magnetos.

Magneto ignition has developed wonderfully during the past ten years. There was a time not long ago when a magneto for ignition purposes was a curiosity but the engine not supplied with some kind of a magneto now is as much of a curiosity. The evolution of the magneto began with the old low tension direct current which required several hundred revolutions per minute in order to generate sufficient current for ignition purposes. With this type of magneto it was always necessary to have battery ignition to start the engine and get up the speed necessary to start the magneto to work. This magneto was later superseded by an alternating current magneto which did not have to run so fast, and which gave better service on account of making a hotter spark. It was also found to be more economical. High tension magnetos were then developed, which would work without the aid of a coil box, both of the older type requiring the use of a coil box to intensify the spark so it could be used for ignition purposes. These magnetos have been developed until they have been built to run at the same speed of the engine and produce a sufficient spark at a very slow

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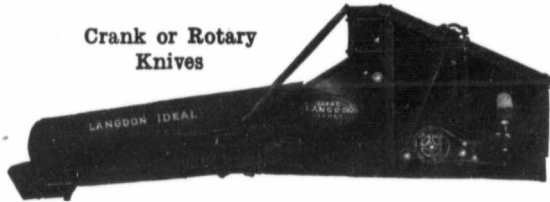
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nothing has been left undone to insure a long period of service. And above all, there is the Langdon governing device—the real secret of successful mechanical feeding—the only governing system that acts on the principle of cylinder resistance. The governing device that supplies the brains of the hand feeder, estimating, as it were, in advance just how much of any certain kind of grain the cylinder can handle perfectly and allowing that much and no more to pass the retarder. In other words, the dryer the grain the faster it feeds, the tougher the grain the slower it feeds.

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speed to start the engine, making it possible to do away with the batteries entirely for starting purposes.

A magneto is not hard to understand after making a careful examination of it and studying its construction. It consists of a set of magnets, an armature, some carbon brushes and a frame to support the different parts. It takes its name principally from the magnets which form the major part of its construction.

The winding of the armature has to do with the style and type of the magneto and also determines the kind of work it will perform. The armature generally consists of some soft pieces of

metal wound in such a way that when rotated between the magnets they will produce a current of electricity. The armature commonly used to-day produces the current at different places in its rotation between the magnets. The current is only produced at these particular places, so that the magnetos must be timed to the engine in such a way that the armature will be in one of these positions at the time the igniter is tripped to make the spark, or when the timer of the spark plug system makes its contact to make the spark. These places can be very readily determined by holding the magneto in one hand and rotating the armature with the

other. At these places will be noticed a resistance or tendency of the armature to rotate in the opposite direction to the way it is being turned. These are called the points of resistance.

The worst enemy of a magneto is surplus oil and dirt. These will cause short circuits. Oil is to be used on a magneto in the most sparing way possible, as ball bearings are generally used on the armature, which do not need but little oil. If too much oil is put on these bearings it will get on the commutator, brushes, etc., and you will get no current. This can nearly always be remedied by washing the magneto thoroughly in gasoline or kerosene, but care

must be taken to allow it to become thoroughly dry before attempting to use it again.

Most magnetos at present are gear driven. When removing this type of magneto from the engine, look for the markings on the gears. These are put there by the factory so it can be replaced to run in perfect time with the engine. If there are no markings, make some before removing, so you will be sure to get the same teeth back together again. You will then have no trouble in removing and replacing the magneto. If you should, however, remove it before looking for these marks and after it is too late to find that there are no markings,

you may get out of your difficulty in the following manner: Take the magneto in one hand and determine by rotation where the points of resistance are and mark them. Then set your engine so that the igniter has just tripped; then place your magneto on its resistance position and put it in mesh with the gears, and you are right.

There are still a few friction drive magnetos in use, so a few words about them and the method of placing them in position might be well mentioned here. The magneto should rest on a firm foundation with the friction wheel touching the flywheel just hard enough to cause it to rotate at the proper speed to produce the spark. You will notice a little governor of some kind on the armature shaft which allows the friction wheel to slip when a certain speed is reached. This is to prevent the burning out of the armature. A magneto should never be fastened to a flywheel so that it can not get away when the speed gets too high for it. If it is, you will be in the market for a new magneto.

There is still another magneto which is so unique in its construction as to constitute a class by itself, which we will call the oscillating magneto. Its workings give it its name. It consists of a frame, magnets, armature, a wire to the stationary electrode and a finger on the end of the rotor, which corresponds to the armature of the other type of magnetos, to give it the little oscillating motion which is all the motion it needs. The strong points of this magneto are that it will give as hot a spark as when it is running 500 revolutions per minute. It is also arranged so that it operates only when a spark is desired. It is operated by springs. The igniter rod rotates it as far as it is to go in one direction, when it slips off and the springs return it to the rest position, the movement by the spring producing the spark, so you can see that it will work just as quickly at slow as high speed. This magneto is very efficient in starting the engine and requires no batteries whatever. It is very durable, being injured only by over-lubricating and the wear in the bearings. Too much oil will short-circuit it, and if the bearings wear until the rotor touches the magnets at any place this will also put it out of business.—J. L. Hobbs, in American Blacksmith.

#### Delicately Put

"I do hope you appreciate that in marrying my daughter you marry a large-hearted girl?"

"I do, sir! And I hope she inherits those qualities from her father."—Passing Show.

#### Advise Use of Best Oils Only

Many a man has been surprised to be told that he saws his whisks off. Yet this is exactly what he does when he shaves. Examination of the edge of a well sharpened razor, under the microscope, shows not a smooth edge, as was once supposed, but a series of more or less regular teeth. "This saw-tooth edge," says E. R. Gross, of the Colorado Agricultural College, "is the junction between the two surfaces of the blade and cannot be avoided."

"If this is the condition on a highly polished razor blade," continues Mr. Gross, "what enormous hills and valleys must one expect to find on the surface of the ordinary polished bearings used in machinery and motors. These rough surfaces, rubbing together, produce friction, which reduces the efficiency of any machine. Roller or ball bearings overcome friction to a considerable extent, but there are places where they cannot be used. In these cases oil takes their place. Oil actually works very much like ball bearings, the two sliding surfaces rolling over little globules."

"Just as in the case of ball bearings, the little globules of oil finally become 'chipped' so that they no longer roll easily. When this time comes it must be renewed. Oil that has become black from use has left only a small percentage of its lubricating qualities."

"The best grades of oil are most resistant to the destructive agents, heat, friction and wear, which causes it to deteriorate. For most uses, a cheap grade of oil costs more in the end than a good grade. Even the best grade must occasionally be replaced. Probably the hardest task oil is called upon to perform is to lubricate the piston and cylinder of an engine which are exposed to the intense heat of burning gases. For this purpose the oil cannot be too good."

#### The Stingy Thing

Lysander, a New York State farmhand, was telling his troubles to a neighbor, and among other things said that the wife of the farmer who employed him was "too darned close for any use."

"This very morning," said he, "she said to me, 'Lysander, do you know how many pancakes you have et this morning?' I said, 'No, ma'am, I aint had no occasion to count 'em.' 'Well,' said she, 'that last one was the twenty-sixth.' And it made me so dodgasted mad I jest got up from the table and went to work without my breakfast."—Exchange.

## TALKS ON TRACTOR FUELS

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# Coming Events Cast Their Shadows Before Them



## The Hum of the Threshing Machine

is the music of the hour on the farms of Western Canada. The great fields of grain are ripe, and the busy season is in full swing. New equipment is wanted, or the old overhauled. The question of what belt to use is being answered by the large majority of Threshermen in selecting the

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### WORLD WILL DEMAND MANY CHEMISTS AFTER WAR

It has been said that this is a chemists' war. While chemists are important in the making of munitions, in food production, and in sanitation, the opinion of many leaders in this field is that the real demand for chemists will be felt after the war is over and the world seeks to replace that which the war has destroyed. We find the hope expressed on all sides that the courses in chemistry and chemical engineering will not be curtailed in our educational institutions this coming year, either in equipment or attendance. Sir

Robt. Hadfield, president of the Faraday Society, has said: "It is most desirable that increased facilities should be given to training chemists to meet the conditions which will arise after the war." Not only will chemical engineers be in demand, but biological chemists, analysts, assayers and metallurgists, and in fact every line of work will demand more trained men. The field of chemistry is limitless—the harvest great and the reapers few. Any young man who has the least inclination to follow chemistry as a profession can soon learn whether or not he has the proper build of mind for it, and if the

ability is there, the way should be opened for him to take his place in the army of twelve or fourteen thousand chemists of this country.

### The Care of Magnetos

Magnetos should be kept free of oil, dirt and moisture to insure efficient service.

A good practice is to keep the magneto protected by a cover. This will prevent oil from reaching the magneto. Any oil film on the magneto or breaker parts tends to hold dirt and dust, with the result that before long a short circuit will occur.

Small fibre washers are used in

the manufacture of magnetos to insulate certain of the important working parts and it only requires a small amount of oil, water or dirt accumulation to cause short circuiting across the binding posts or breaker parts.

Even when pouring water into the radiator, the overflow will splash on the magneto and interfere with its correct operation. The same trouble may be experienced in rainy weather.

The use of a tightly fitting cover eliminates most of these difficulties.

The magneto base should be kept clean, so as to insure an uninterrupted ground circuit.

## Those Knocks in the Chassis

Does your car chatter? Does it talk to you and protest against running over holes and bumps in the road? If it does, it is a sign that you should pay attention to, a hint that you should do away with the knocks and clicks and chattering which annoy you and everybody else within hearing as you run along. That is, if you find them, for there are some noises so obscure as to defy detection even by the expert.

Such was the car which developed a sharp click when it was started forward or backward, says H. Clifford Brokaw, principal West Side Y.M.C.A. Automobile School, of New York. It ran quite a long time before it was possible to discover just what and where it was. It was somewhere in the back end, but so hidden as to defy detection. The rear axle was of the floating type, the construction in which the driving shaft is connected to the hub of the wheel by a number of flutings on the shaft, into which corresponding projections of the flange fitted. These had become worn and allowed sufficient play to cause a noise.

By walking alongside of the rear wheel while the car was being started and stopped, it was decided that the sound came from the hub of the wheel. The hub cap was removed and by placing the finger on the hub flange and end of shaft at the same time the play was detected by the sense of feeling, though it was hardly visible to the eye. The trouble was overcome by having the shaft welded to the flange.

A few days later the owner happened to be at the agency and told what he had found.

"So glad you came," was the response, "for we have been looking for the same kind of a clink a long time ourselves and the service station mechanics have not been able to locate it. They thought it was in the brake, but upon examination could see no reason for a clink."

I have seen cases where the wheel was keyed on, and where the keys had acquired sufficient play to cause a continuous knocking, especially when the machine was being driven at low speed. This sort of knocking is more likely to occur with the four-cylinder slow-speed engine than with the high-speed many-cylindered type.

A mysterious knock sometimes may be traced to the torque rod, which is loose at the forward end, or to worn torque tube bearings,

and in some cases the bolts fastening the torque rods to the rear axle become loosened or worn, causing a knock, especially when going over bumps or dropping into holes.

The brake rods become worn and set up a continuous clattering on rough roads and noise is accentuated if the tires are kept inflated at too high a pressure. As a matter of fact the car owner has the choice between the greatest life for his tires with accompanying rattles and discomforts, and riding at a sufficiently low pressure to subdue these noises and make life in a car worth living; of course, there will be an attendant higher wear of tires.

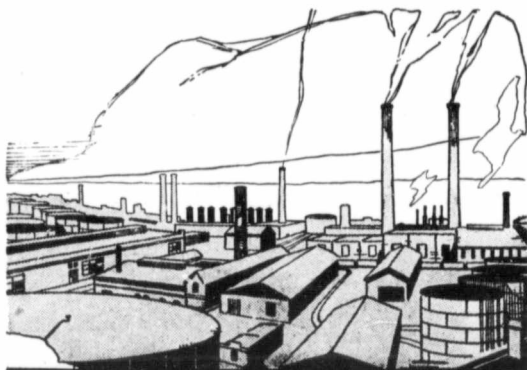
Worn spring shackle bolts will not ordinarily cause knocking or rattling, but when going over bumps or holes the rebound of the body is sufficient to make the looseness audible. It can be overcome by having a new bolt put in, and prevented by keeping the bolts well lubricated.

Worn steering knuckle pins and tie-rod bolts will be found responsible sometimes for knocks and rattles in the front end of the car. The remedy is obvious and the location of the noise is not hard to find.

In addition to these, we have rattles due to tools being thrown loosely into the tool box, and sometimes the body bolts become loosened. The lamps occasionally jolt loose and the license plate bracket is sometimes so loose that it is audible as well as visible.

There are other knocks due to broken gear teeth and other broken parts and sometimes these broken teeth, loose nuts, bolts or pins, in gear or differential case become wedged between the gear teeth and cause a knocking that is not hard to locate, albeit rather expensive to repair. And then there are the knocks and rattles from the hundred or more accessories which are attached to the chassis of many cars and which sooner or later develop defects and noise.

The up-to-date well-designed car in perfect shape is practically noiseless and if a knock or rattle develops it indicates that something is worn or out of adjustment and needs attention. The owner who takes care to have all parts properly lubricated and kept tight need fear none of these annoyances, and proper attention means lack of annoyance when out touring; while slovenly habits will advertise themselves to everyone along the road.



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history is being recorded in scientific farming which in the threshing season of 1917 will outclass much that has drifted into the past, and will probably set the pace for many years to come. In this circle of progress few things are playing a more prominent part than the



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**WINNIPEG FORT WILLIAM REGINA SASKATOON CALGARY LETHBRIDGE EDMONTON**

**Hardening Special Tools**

It is well known in the shop that some castings when placed on the machine tools develop exceedingly hard spots caused partly by chilling in the mold. Machining these, it is a difficult and tedious matter to keep the tool sharp enough to do good work. Continual trips to the emery wheel are necessary, causing annoyance and wasted time. In cases of this kind, the writer uses a tool hardened as follows:

Heat a good quality of tool steel (not the high-speed variety) to a cherry red; plunge into salt water until cold; pull out and hold over the fire until a drop of water will evaporate when placed upon it. Then plunge into cold water. This takes the hardening strain off the tool and prevents the edges from breaking out. In practice, a tool of this kind will work well on chilled spots and keep a sharp edge.

**A Boomerang**

"Willie, your master's report of your work is very bad. Do you know that when Woodrow Wilson was your age he was head of the school?"  
 "Yes, pa; and when he was your age he was President of the United States."—Tit-Bits.

**Locating Small Punctures**

Occasionally trouble is experienced by the failing to locate minute punctures in the inner tube. Even when the tube is pumped almost to bursting pressure the tell-tale bubbles often fail to show themselves. If the tube be slightly inflated, then wound round spirally with string, a great pressure can be forced in without risk of a burst. Even the tiniest hole will be found by this means.

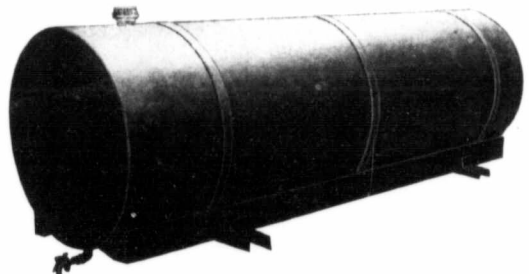
**Overhauling the Engine**

To those owners who may of necessity be overhauling their cars we need hardly counsel any who may be dismantling the power unit and magneto not to leave the armature out of the tunnel without a "keeper," or the magnets will lose their magnetism. Never jar magnets unnecessarily, as it tends to reduce magnetism.

**Removing Rust from Nickel**

Rust may be removed from nickel by smearing the parts with grease and allowing it to remain for several days. If the rust is not bedded too deeply in the metal it can be rubbed off with the grease, a cloth dipped in strong ammonia being utilized for the purpose. If it be very deep, apply a diluted solution of hydrochloric acid.

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36 "	10 "	525 "	625 "	12

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# TRACTOR TESTS

Conducted at Fremont, Nebraska

July 26 to August 2, 1917, by the Agricultural Engineering Department of the University of Nebraska

Prof. L. W. Chase in Charge

**T**HE following report is on tests made on Case Tractors operating standard farm implements, conducted by the Department of Agricultural Engineering of the University of Nebraska under the direction of Professor L. W. Chase, assisted by Professor O. W. Sjogren, Mr. Louis Runnels and Mr. Ray W. Carpenter.

**OBJECT:** The object of the experiments was to determine under actual farm conditions the amount of fuel required and the rate of doing various field operations, and to study the quality of the work done. Also to determine how different depths of plowing in the same field affected these factors as shown by the first three tests. The tests were not of competitive nature, but were made with the object in view of determining the factors involved in practical operations of tractors on farms.

**EQUIPMENT:** The tractors used were the Case 9-18, Case 10-20, and Case 12-25 kerosene tractors, all new, and Grand Detour plows furnished by the J. I. Case T. M. Co. The other implements were one John Deere 8-foot double action engine disc harrow, one 20-foot four section, Ajax, steel, spike tooth harrow, and a 16-inch single disc, end wheel Van Brunt drill, all loaned by the John Deere Plow Company.

**FIELD:** The tests were conducted in two separate fields—one of about nine acres lying about one mile northwest of Fremont—the other a twenty-five acre field about four miles northwest of town. Both fields are level. Tests No. 1 to 3, inclusive, were made in the first field, and all the other tests in the second field.

The first field was wheat stubble; the soil varied, the greater part was sandy loam with gumbo in places. The soil was extremely dry and the draft was therefore greater than it would have been with the ground in ordinary condition. The second field was oats stubble; the soil was sandy loam and uniform. The ground was dry although in better shape than the first field.

**METHOD:** Both fields were plowed in the same manner. Lands were laid out lengthwise, and each test was made on a separate land. The turning at one end was done on a head land about fifty feet wide left for that purpose, and at the other end on a road. The outfits were operated by different operators who changed about. The area plowed was measured at the completion of each test by the men in charge. The time required to turn each furrow and make each turn was recorded to the nearest five seconds.

Before each test, the tractors were drained and the fuel, both gasoline and kerosene, was weighed in. At the completion of the test, the remaining fuel was weighed again and the difference represented the amount used. The motors were started in beginning each test and gasoline was used until they warmed up, except in one test, when the motor was sufficiently hot to start on kerosene. The gasoline used was charged to each test and the quantity varied because the operators sometimes neglected to change fuels as soon as they might have.

**FUEL:** The fuel used was Perfection kerosene, 45 Baume test and the weight per gallon was 6.6 lbs. Red Crown gasoline 59 Baume test, weighing 6.125 lbs. per gallon was used.

The price of the kerosene delivered in the field was 8½ cents per gallon and the gasoline 21¼ cents. The cost of fuel per acre is based on these prices.

## Case 10-20 Tractor Pulling 3-Bottom 14-Inch Plow, 4 Inches Deep

Test No. 1. July 26, 1917

**RESULTS:**

Net amount of land plowed during test..... 1.71 A.

**TIME:**

Plowing	13	35	
Turning at ends	—	—	—
Total	1	32	5

**FUEL—Amount of Fuel Used During Test:**

Gasoline	0.10
Kerosene	3.015
Total	3.025
Average per acre	1.770
Per 10-hour day	16.2

**PLOWING DATA:**

Depth of plowing	4 in.
Width of land plowed	100 ft., 6 in.
Length of furrow	700 ft.
Rate of travel while plowing	2.20 miles per hour
Percentage of time spent in turning at ends	12 per cent
Average time required to plow an acre	1 hr. 34 min.
OR	80.5 A. per hour
<b>COST OF FUEL PER ACRE</b>	16 cents

## Case 10-20 Tractor Pulling 3-Bottom 14-Inch Plow, 6 Inches Deep

Test No. 2. July 26, 1917

**RESULTS:**

Net amount of land plowed during test..... 1.62 A.

**TIME:**

Plowing	1	30	40
Turning at ends	—	12	15
Total	1	51	55

**FUEL—Amount of Fuel Used During Test:**

Gasoline	.08
Kerosene	4.26
Total	4.34
Average per acre	2.66
Per 10-hour day	23.2

**PLOWING DATA:**

Depth of plowing	6 in.
Width of land plowed	101 ft.
Length of furrow	700 ft.
Rate of travel while plowing	2.25 miles per hour
Percentage of time spent in turning at ends	10 per cent
Average time required to plow an acre	1 hr. 9 min.
OR	87 A. per hour
<b>COST OF FUEL PER ACRE</b>	24 cents

## Case 10-20 Tractor Pulling 3-Bottom 14-Inch Plow, 8 Inches Deep

Test No. 3. July 27, 1917

**RESULTS:**

Net amount of land plowed during test..... 1.62 A.

**TIME:**

Plowing	7	16	25
Turning at ends	—	21	55
Total	7	37	80

**FUEL—Amount of Fuel Used During Test:**

Gasoline	.10
Kerosene	6.08
Total	6.18
Average per acre	3.77
Per 10-hour day	37.9

**PLOWING DATA:**

Depth of plowing	8 in.
Width of land plowed	101 ft.
Length of furrow	700 ft.
Rate of travel while plowing	1.75 miles per hour
Percentage of time spent in turning at ends	11 per cent
Average time required to plow an acre	1 hr. 27 2/3 min.
OR	68 A. per hour
<b>COST OF FUEL PER ACRE</b>	33 cents

**REMARKS:** The field in which the foregoing three tests were made had gumbo spots and had never been plowed as deep in places before. The 8-inch test was also considerably below the depth of any previous plowing, necessitating the breaking up of a hard pan. The draft was therefore greatly increased in that test and where the gumbo spots were encountered in the other tests. The field had last been plowed with a 16-inch sulky plow drawn by three horses. This had been too big a load and therefore deeper plowing could not be accomplished. The advantage of tractor plowing is here plainly shown; the most desirable depth may be secured.

## Case 10-20 Tractor Pulling 3-Bottom 14-Inch Plow, 6 Inches Deep

Test No. 4. July 28, 1917

**RESULTS:**

Net amount of land plowed during test..... 1.78 A.

**TIME:**

Plowing	4	51	45
Turning at ends	—	7	51
Total	4	58	38

**FUEL—Amount of Fuel Used During Test:**

Gasoline	.10
Kerosene	3.94
Total	4.04
Average per acre	2.2
Per 10-hour day	20.6

**PLOWING DATA:**

Depth of plowing	6 in.
Width of land plowed	102 ft., 3 in.
Length of furrow	1210 ft.
Rate of travel while plowing	2.29 miles per hour
Percentage of time spent in turning at ends	7 per cent
Average time required to plow an acre	1 hr. 6 1/2 min.
OR	90 A. per hour
<b>COST OF FUEL PER ACRE</b>	20 1/2 cents

**NOTE:**—The recommended depth of plowing in this field was 6 inches, and therefore this and subsequent tests were made at that depth.



Case 10-20 plowing, pulling 3-bottom plow over clay hills

## Case 9-18 Tractor Pulling 2-Bottom 14-Inch Plow, 6 Inches Deep

Test No. 5. July 31, 1917

**RESULTS:**

Net amount of land plowed during test..... 1.4 A.

**TIME:**

Plowing	2	4	55
Turning at ends	—	7	15
Total	2	11	10

**FUEL—Amount of Fuel Used During Test:**

Gasoline	.02
Kerosene	3.12
Total	3.15
Average per acre	2.225
Per 10-hour day	14.5

**PLOWING DATA:**

Depth of plowing	6 in.
Width of land plowed	48 ft., 11 in.
Length of furrow	1250 ft.
Rate of travel while plow-	2.265 miles per hour
Percentage of time spent in turning at ends	6 per cent
Average time required to plow an acre	1 hr. 54 1/3 min.
OR	69 A. per hour
<b>COST OF FUEL PER ACRE</b>	19 1/2 cents



# CASE



## TRACTOR TESTS—Continued

### Case 12-25 Tractor Pulling 4-Bottom 14-Inch Plow, 6 Inches Deep

Test No. 8 July 28, 1917

RESULTS:

Net amount of land plowed during test..... 2.28 A.

TIME: Hours Minutes Seconds

Plowing..... 2 23 50

Turning at ends..... 10 15

Total..... 2 34 5

FUEL—Amount of Fuel Used During Test: Gallons

Gasoline..... 6.8

Kerosene..... 6.48

Total..... 13.28

Average per acre..... 5.82

For 10-hour day..... 2.47

FLOWING DATA:

Depth of plowing..... 6 in.

Width of plowing..... 80 ft., 6 in.

Length of furrow..... 1150 ft.

Rate of travel while plowing..... 1.67 miles per hour

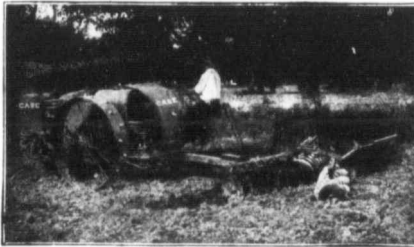
Percentage of time spent in turning at ends..... 7 per cent

Average time required to plow an acre..... 1 hr 17 1/2 min.

OR..... 89 A. per hour

COST OF FUEL PER ACRE..... 25 cents

NOTE—Practically the same amount of water as kerosene was used with the fuel in this tractor during the test.



Case 10-20 discing in orchard

### Case 9-18 Tractor Pulling 3-Bottom 14-Inch Plow, 6 Inches Deep

Test No. 7 July 30, 1917

RESULTS:

Net amount of land plowed during test..... 1.6 A.

TIME: Hours Minutes Seconds

Plowing..... 1 55 45

Turning at ends..... 7 35

Total..... 2 3 20

FUEL—Amount of Fuel Used During Test: Gallons

Gasoline..... 12

Kerosene..... 2.75

Total..... 14.75

Average per acre..... 9.22

For 10-hour day..... 11.95

FIELD DATA:

Depth of plowing..... 6 in.

Width of land plowed..... 56 ft., 4 in.

Length of furrow..... 1250 ft.

Rate of travel while plowing..... 1.85 miles per hour

Percentage of time spent in turning at ends..... 6 per cent

Average time required to plow an acre..... 1 hr 16 4/5 min.

OR..... 78 A. per hour

COST OF FUEL PER ACRE..... 16 cents

REMARKS: In the first field plowing the furrows were shorter and more time was spent turning at ends than in the second field. A saving of both time and expense may often be effected in tractor operation, and better work accomplished, if the field is properly laid out when starting.

The depth of plowing for each test was uniform, the quality of the work done was excellent, and it is doubtful if it could be equalled with a horse-drawn plow. After the tests all the land was plowed and the dead furrows nicely finished.

At no time during these tests were the tractors loaded down to the maximum, and any reasonably greater depth of plowing could have been accomplished. During the greater part of the time the tractors had abundance of reserve power. This is of practical significance to the owner of a tractor, in that it permits the tractor to be used under all conditions, when the

draft may vary to a great extent, without having to skip the work or getting stuck in negotiating those places. It also means a longer life for the machine, and greater satisfaction in its use. There is perhaps nothing so deteriorating and harmful to a machine, and especially tractors, as overloading.

### Case 9-18 Tractor Discing Stubble, Pulling 8-Foot Double Action Engine Disc Harrow

Test No. 8

RESULTS:

Net amount of land covered during test..... 3.53 A.

TIME: Hours Minutes Seconds

Duration of test..... 1 20 25

FUEL—Amount of Fuel Used During Test: Gallons

Gasoline..... 3.41

Kerosene..... 3.41

Total..... 6.82

Average per acre..... 1.93

For 10-hour day..... 26

FIELD DATA:

Width of field..... 123 ft. 3 in.

Length of field..... 1250 ft.

Area..... 154,000 sq. ft.

Number of rounds..... 9

Rate of travel per hour..... 2.7 miles per hour

Average time required to disc one acre..... 22 4/5 min.

OR..... 2.63 A. per hour

COST OF FUEL PER ACRE..... 9 cents

NOTE—The disc was set at nearly full cut and so as to produce the best effect.

### Case 9-18 Tractor Harrowing, Pulling 20-Foot, 4-Section Spike Tooth Harrow

Test No. 9 July 31, 1917

RESULTS:

Net amount of land harrowed during test..... 11.5 A.

TIME: Hours Minutes Seconds

Duration of test..... 1 33 25

FUEL—Amount of Fuel Used During Test: Gallons

Gasoline..... None

Kerosene..... 3.625

Total..... 3.625

Average per acre..... 0.316

For 10-hour day..... 19.2

FIELD DATA:

Width of field..... 100 ft.

Length of field..... 1250 ft.

Area..... 125,000 sq. ft.

Rate of travel per hour..... 11.5 A.

Average time required to harrow an acre..... 9 4/5 min.

OR..... 6.08 A. per hour

COST OF FUEL PER ACRE..... 2.7 cents

### Case 9-18 Tractor Seeding, Pulling 16-Single Disc Drill

Test No. 10 July 31, 1917

RESULTS:

Net amount of land covered during test..... 5.05 A.

TIME: Hours Minutes Seconds

Duration of test..... 1 32

FUEL—Amount of Fuel Used During Test: Gallons

Gasoline..... .84

Kerosene..... 2.19

Total..... 3.03

Average per acre..... .6

For 10-hour day..... 29.9

FIELD DATA:

Width of field..... 176 ft.

Length of field..... 1250 ft.

Area..... 220,000 sq. ft.

Rate of travel per hour..... 3.45 miles per hour

Average time required to seed one acre..... 18 min.

OR..... 3.28 A. per hour

COST OF FUEL PER ACRE..... 5 1/2 cents

NOTE—A 22 shoe drill could have been pulled with this tractor and greater acreage obtained, as well as fuel economy effected.

NOTE: The Case 9-18 is recommended and sold as a two-plow tractor.

### GENERAL NOTES

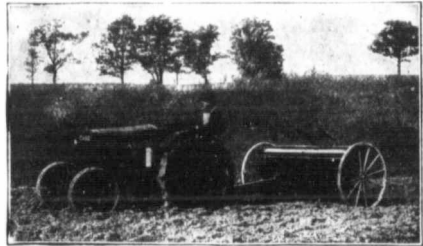
After the motors had warmed up, kerosene was used throughout the tests, and no difference in the performance or the power of the tractors could be noticed, in fact it was impossible to detect which fuel was being used without examination of it.

No water is used with the fuel in the Case 9-18 and 10-20 kerosene tractors; in the larger sizes water is used.

The water used in radiators for cooling was not accurately measured, the average amount evaporated during each test was probably less than three pounds, or less than 1 1/2 lbs. per hour.

### CONCLUSIONS

Although the duration of these tests was comparatively short, the average for any given period



Case 9-18 Seeding

within the tests coincided with the general average. This would show that the results obtained were average, and would undoubtedly have been the same for all similar conditions.

The tractors seemed equally well adapted for discing, harrowing and seeding as they are for plowing. The work done was very good, and these tests show that these operations may be performed with tractors with great dispatch.

During the time all these tests were made, the temperature hovered about and over 100 degrees in the shade. The sun was sizzling hot and no horses could have endured the heat at any hard work in a field. The heat, however, had no effect on the operation of the tractors in any way.

The heaviest and most important work the farmer has to do, often comes during the hottest period in the year, and good work is often precluded by ineffective power under those conditions, or the work is delayed.

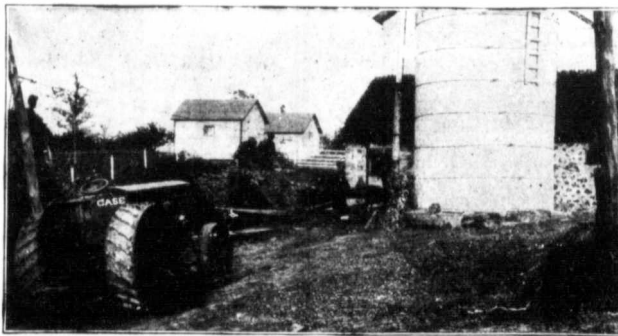
The foregoing results obtained with these tractors are representative of the results being obtained by thousands of owners of Case tractors all over the country. There have been better results obtained, but this demonstration represents ordinary conditions, and the results were accurately determined.

All who wish to know additional facts regarding Case Tractors and other Case Machinery, will please forward their name and address to the

**J. I. CASE THRESHING MACHINE CO., Inc.**

Erie St., Racine, Wis.

Founded 1842



Case 12-25 tilling stro

# CASE



The Sign of Mechanical Excellence the World Over



**WOODLOTS AND THEIR VALUE**

By Proper Utilization a Permanent Fuel Supply is Assured

**W**OODLOTS on the farms can be made an important factor in the relief of the threatened fuel shortage. Farmers and the residents of smaller towns and villages situated within hauling distance of woodlots, should, as a measure of practical patriotism, use wood in preference to coal.

Few farmers realize the value of the crop which can be obtained from their woodlots. If even a small proportion of the attention given to other crops were devoted to the protection and improvement of the "bush" a good financial return could be secured. Aside from its value in affording protection against wind and storms, its importance in the conservation of soil moisture and its aesthetic value, the woodlot has a considerable value for the crops which can be harvested from it every year at a minimum expense. It should have a place on every farm.

Live stock should be excluded as they destroy the natural reproduction, injure the larger trees and pack the soil so that the growth of the trees is retarded. Defective and diseased trees should be removed first; then those of poor form, such as very crooked or very branchy ones which interfere with the growth of better formed neighbors. The trees of the less valuable species such as dogwood, ironwood and hornbeam should then be removed. Every effort should be made to secure natural reproduction but, if that be impossible, planting will be found profitable.

The tendency has been to encourage the growing of soft-

woods suitable for lumber, such as pine, spruce and cedar, but the function of a farmer's woodlot is better fulfilled by producing hardwoods for fuel.

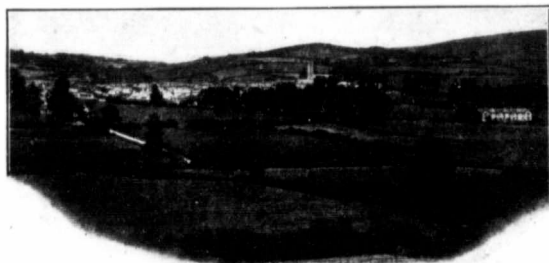
The fuel value of one cord of several of the common kinds of wood is equal to the following quantities of anthracite coal:

Hickory and hard maple, 1,800 to 2,000 lbs. of coal; white oak, 1,540 to 1,715 lbs. of coal; red oak, black oak and beech, 1,300 to 1,450 lbs. of coal; poplar, chestnut and elm, 940 to 1,050 lbs. of coal; pine, 800 to 925 lbs. of coal.

Therefore, hardwood is worth, to the owner of the woodlot, from \$6.00 to \$9.00 per cord, as compared with coal at \$10 per ton, plus the cost of hauling it out to his farm.

If a yield is to be sustained permanently, it should not exceed the annual growth which, in unmanaged woodlots, probably does not exceed  $\frac{3}{4}$  cord per acre. This production can be considerably increased by careful management. A woodlot may be considered as similar to a savings' bank account from which the annual interest, represented by the growth, may be taken out or allowed to accumulate. In the case of the woodlot, however, the withdrawals can be so made as to greatly benefit the condition of the stand and improve its productivity.

The Dominion Forestry Branch and the various provincial forestry organizations have done much to encourage farm forestry by supplying advice and assistance. The Dominion Government distributes annually between 3,000,000 and 3,750,000 seedlings and cuttings among the farmers of the prairie provinces. In Ontario, the Forestry Branch of the Department of Lands, Forests and Mines also supplies seedlings for planting in farmers' woodlots.—



**Conservation**

is the watchword of civilization to-day, and nowhere is it of greater significance than on the Canadian farm. Waste leads to want even where there is "enough and to spare." In these war times of rapid destruction of food products, how needful to produce more and to conserve the product! Have you tried the effect of saving your butter fat with the

**"MAGNET" Cream Separator?**

Seventeen years' constant use on Canadian farms have established beyond the shadow of a doubt that the "Magnet" with its square gear drive and ball-bearing adjustments has nothing in front of it in this respect, as well as for its own lasting qualities.

DAIRY WOMEN know that the "MAGNET" bowl and one-piece-skimmer is easily washed sweet and clean in less than five minutes—a saving of from 10 to 15 days' labor each year over the time required to properly wash the disc kind. The

**MAGNET ALWAYS SKIMS CLEAN**

because its bowl is supported at both ends, cannot wobble and therefore will do perfect skimming for a life-time. Dairy men and women can avoid all "misery" by buying the up-to-date "Magnet" Cream Separator.

"Facts are chiefs that winna ding, and canna be disputed."

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| Chicago .....       | 223 W. Jackson Blvd. | Toronto .....   | 14 Manchester Bldg.        |
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**FERTILIZERS AND FARMING**

**F**ERTILIZERS have a place in a rational system of farming; but farmers should first clearly understand what that place is, if our land is to improve rather than to deteriorate, and if financial loss, due to injudicious purchase of fertilizers, is to be avoided. We must first have sound education, the outcome of science with practice, on the principles involved in the upkeep of soil fertility, on the composition, value, care and application of farm manures, on the desirability of more live stock on our farms and the greater consumption on the farm of the land's produce; on the importance of rotations, and especially the value of clover and other legumes in the rotation for maintaining the humus and nitrogen of a good seed bed. When all these matters are correctly understood and practised, then and not before, may we advocate the judicious employment of fertilizers with advantage, in general farming. Fertilizers are no panacea for the evils of poor farming — they cannot be depended on solely to give profitable yields, to leave the land richer for posterity than when first broken, or entered upon. That is what we ought to aim at, for our native fertile soils are a great and important national asset and inheritance. Our experience has shown that fertilizers cannot profitably be used as substitutes for manure, for the growing of clover, or for good soil management, but that their role is rather supplemental to all these rational means for the upkeep of soil fertility. I make this statement for two reasons. First: At the present time, those who are urging us to a large and practically universal, almost indiscriminate, use of fertilizers; and second, from our voluminous correspondence on the subject, it is evident that, for the most part, it is the man using poor farming methods who is clamoring for cheaper fertilizers, and who practically expects to conduct his farming profitably from their exclusive use. I feel assured we shall never see the time when fertilizers can be profitably used as a substitute for those means which science and practice alike have shown to be necessary for the economic upkeep and increase of soil fertility.

But there is a place for fertilizers in farming, and we are helping our farmers to find it. There are those of the old school still in the land, however, who have no faith in fertilizers, those who relegate them to the class of quack medicines, as frauds and fakes, and who say they act merely as a whip to a tired horse

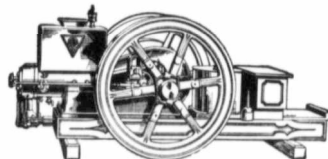
—as stimulants and not food. The number of these persons is happily decreasing. Again, there are others who, almost as ignorant of the principles of agriculture as those just referred to, argue that if fertilizers are sources of available plant food, all that is necessary to increase our crop yields is to apply them generously. These persons are ignorant of the fact that there are limiting factors to crop growth other than the presence of available plant food. We may enumerate them. First, there is the nature and physical condition of the soil, its capacity for holding moisture (dependent upon its texture and its humus content), in other words, its power to withstand drought, also its degree of aeration, its drainage, etc.—all those qualities of a physical character which make for the easier development of the root system. Second, the character of the season, by which I mean the amount and distribution of rain, temperature, hours of sunshine, etc. So far as we can see to-day, seasonal conditions are the most potent of all determinative factors in crop yields in Canada, as probably, also, all over the world. Thirdly, there is the inherited capacity for growth and reproduction in the crop sown. All these, with some others, are limiting factors that cannot be overlooked; they are factors which may and do profoundly modify the effect of fertilizers. For instance, upon heavy undrained clays, what chance is there that fertilizers can play their part in nourishing the crops? On the other hand, as plants can only absorb their food in the form of a solution, how can fertilizers feed the crop, if, owing to lack of humus or want of surface cultivation the light soils readily dry up with a few days drought? Or, again, if we are sowing a variety of oats, the prolificness of which is measured by 40 bushels per acre, can we make it yield 60 bushels by simply feeding it? Many of these limitations may be in some degree overcome through the application of the teaching of science—of chemistry, physics and biology, but they are not to be overcome simply by the application of fertilizers.—Dr. F. T. Shutt at Annual Meeting of the Commission of Conservation.

**Sure of Getting His**

"The first shall be last and the last shall be first," quoted the devout citizen.

"It makes no difference to me how you arrange 'em," replied the expert commercialist. "I'll get mine either way. I'm the middle-man."—Washington Star.

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**TWELVE MONTHS OF THE BEST FARM PAPER PUBLISHED FOR ONE DOLLAR**

## The Mechanical Milker

**B**ECAUSE the dairy cow is a good institution with certain drawbacks, there has long been a keen interest in machines and processes for doing dairy work more easily, and each basic invention in that line has brought about a revolution in the industry.

The first really big dairy machine was the cream separator. It began to appear on farms along in the eighties, and effected a wonderful transformation. The milkmaid was an actual character before the separator came, represented by the labor of the women on the farm, who had to work constantly and work hard to turn milk into butter by the old-fashioned method of setting and watching it, skimming the cream, churning, coaxing the butter, and so forth. When the cream separator arrived all the drudgery of skimming cream was moved out into the barn, and most of the work of churning was centered in a factory, where it belonged under the modern scheme of things.

Modern barns, factory-made barn equipment, the factory-built silo and other improvements reduced the drudgery of dairying still further, and brought the industry to a point where only one invention was still needed—something to milk the cow automatically.

And now, after the inevitable period of experiment and pioneering, the milking machine is here.

As the machines themselves have been improved there has come a better understanding all along the line. This begins with the manufacturer, who realizes that operators must be trained to run even a perfect milking machine, and that the machines must be backed up by close service on his part to keep them running

satisfactorily after they are installed, just as manufacturers of typewriters and adding machines help their customers with service.

The farmer installing an automatic milker understands that here is an entirely new type of labor-saving machine, different from any other farm implement. It is not complicated or delicate, but it requires study to get results, and milking must be arranged to adapt it to a new method.

Even the cow has had to do a little studying and adapting, for she is a very important factor in successful operation. One investigator gives her first place in the problem, and puts the operator second and the machine third. The cow's attitude toward the machine affects results. Some cows quickly grow accustomed to the machine, and give down milk when they hear it working. Others wait until it is attached, and a few need a little humoring and manipulation at the start.

Operation is at least three-quarters of the milking-machine question, and about the only chance now left for anxiety in making an installation of these machines is to be found in an old problem already established in most dairy barns. That is the labor problem, or, rather, the problem of shifting and incompetent helpers. The milking machine is not especially complicated or delicate, but there must be considerable judgment in using it on different cows, just as different cows require some judgment in hand milking.

This is no problem at all when the work is done by the dairyman himself or by members of the family, or when helpers are capable and steady. It need not be a problem at all when the labor situation itself is handled intelligently.



Proud Wife (taking very nervous friend just a little trip): "I feel so safe with George driving now he has joined the Red Cross. He is learning first aid, and knows where all the hospitals are."

## "Does better all things a tube is meant to do"

A tube is meant to hold air—well—as long as possible; to resist air leakage.

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For we take the best rubber and roll it out tissue-thin for inspection eliminating all sand holes and air bubbles. Then we build up, layer on layer, an extra thick, extra good tube. To finish with we vulcanize in the valve patch, instead of sticking it on.

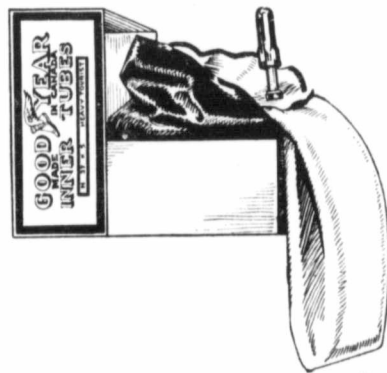
A costly process—yes. A cost that we pay. But we pay it gladly for it but follows our fixed policy to put the name Goodyear only on quality products.

When tubes are suggested, for your tires' sake, say "Goodyears."

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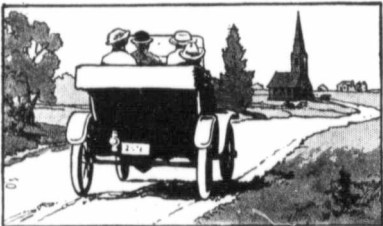
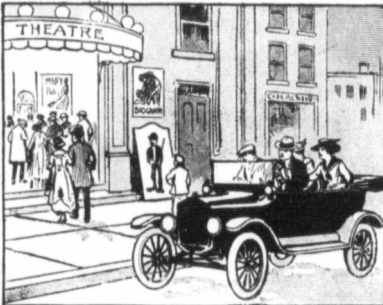
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For a trip to a distant house party, a quick run to the nearest town or city theatre, or a quiet ride to church—the Ford does it all.

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If you have a "problem" in keeping your boys and girls at home, try to solve it the Ford way, you'll find life more worth living. Work on the farm will be easier, because you have more pleasure to go with it.



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Runabout . . . \$475  
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41

On the other hand, the milking machine properly used helps to solve the general labor problem, for it cuts down the drudgery of milking, and makes it possible to do the work with fewer helpers.

Milking machines are figured in units capable of handling six to eight cows an hour. As a man can milk that many cows in an hour, there might seem to be little gain in time. The chief point in machine economy is that one man can attend to three or four units

at the same time, milking twenty to thirty cows an hour.

For that reason it is not economical in time to install a machine for a herd of less than ten to twelve cows, unless the owner appreciates the easier milking or greater cleanliness possible with a machine. So manufacturers do not recommend it for reducing labor costs on a herd of ten to twelve cows. For the same reason, several units are needed with a herd of three to four dozen cows, because, while a single unit would

milk them all, it would be as slow as hand milking.

In many cases, however, it will pay to install a machine for a dozen cows, because the ease of milking will quickly lead to an increase in the size of the herd. It pays also in a situation like that existing to-day in Canada, where 300,000 farm boys have joined the army, leaving the country in a pinch for help. The milking machine is selling briskly there, along with every other labor-saving device for farms.

The investment in milking equipment runs roughly from \$100 to \$125 a unit. The smallest outfit is one of about three units, costing \$300 to \$400 complete. This does not include power, but that can be taken from an ordinary gasoline engine or electric motor, and from two to three horse power is ample to run the air compressor that does the actual milking. The air pressure is moderate—three to five pounds to the square inch.

Reductions in cost of milking

begin to be considerable at about the point where thirty cows are kept. One man with three units can milk that many in an hour with the machine, whereas three men would be needed to do the work in an hour by hand, or it would take one man three hours. This is the same when wages are figured on an hourly basis, of course. The machine will do the work for about forty cents a cow a month, as against a dollar and a half a cow hand milking, on a basis of twenty cents an hour, wages and board. On a herd of thirty cows the saving amounts to a dollar a day.

All breeds are milked equally well with machines, and the valuable cow is no different from the most ordinary scrub. Three-teat cows present no difficulties, nor

would cows with two milking teats, or even one.

The only injuries possible to cows nowadays, with the improved machines, are those due to careless operation or allowing the machinery to get into bad order. Too great air pressure, or leaving the teat cups on the cow too long after she is milked dry, will have a tendency to make the teats sore. But care will prevent all that.

Some manufacturers advise hand stripping of the last richest milk, for the sake of the personal inspection that each cow gets each day. Others say there is no need of hand stripping—that cows can be milked clean and dry with the machine. Sometimes the milking machine will show a decided increase in the milk yield as much as ten per cent, especially if hand milking has been careless.

**SULPHUR AS A FERTILIZER**

**Its Importance as a Plant Food is Recognized**

UNTIL recent years, sulphur, although considered one of the essential plant-food constituents, has been given a relatively secondary place. Instead of being looked upon as an element of minor importance it is now recognized as an element of the greatest importance.

Experiments to determine the value of sulphur as a plant food, when added to the soil, either as elemental sulphur or in the form of a compound, have been carried out to a considerable extent within recent years. A number of United States experimental stations, such as those of Wisconsin, New Jersey, Ohio, Kentucky, Iowa, Oregon and California, have made some remarkable discoveries as to the beneficial effects of sulphur when added to the soil as elemental sulphur or as sulphuric acid. Certain European experiment stations have also added to the knowledge of the value of sulphur as a plant-food. During the last three years the American Smelting and Refining Co., on its Utah experimental farm, made a long series of experiments on the effects of sulphur dioxide, elemental sulphur and sulphuric acid on soils and on plant-growth. The experiments were carried out under normal field conditions and the following table shows some of the results obtained:—

**INCREASE IN CROP YIELDS FROM TREATMENT WITH SULPHUR AND SULPHURIC ACID COMPARED WITH UNTREATED SOILS**

Crop	Planted	Harvested	Gain	
			Sulphur treatment	Sulphuric acid treatment
Alfalfa	April 20	Aug. 7	36.8	8.5
Barley	April 20	Aug. 7	52.6	8.6
Beets (sugar)	April 20	Sept. 28	3.7	2.1
Corn	May 17	Sept. 16	13.1	20.3
Oats	April 20	Aug. 11	57.3	72.9
Peas (Canadian field)	April 20	July 26	383.3	95.1
Potatoes	May 17	Oct. 4	63.0	2.2
Turnips	April 20	July 26	10.4	50.4
Wheat	April 20	Aug. 7	127.8	80.6

"John, what is a proletariat?"  
 "Mary, my dear, I am astonished you should ask me such a question, and before the children, too!"—Baltimore American.



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—because you thought the cheaper oil would lubricate well enough proved poor economy. An expensive tractor and several men were idle and golden minutes were wasted. You are safe in taking our recommendations on the oil for your tractor. We know the right oil for your particular engine.

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**Save Money and Buy Your Plow Shares Now**

<b>PLOW SHARES</b>		<b>SPECIAL</b>	
12 inch	\$3.00	S.P. 27	\$4.00
13 inch and 14 inch	3.25	S.P. 220	4.25
15 inch and 16 inch	3.50	340 Canton	4.00
18 inch	4.00	342 Canton	4.00

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**DON'T SCRAP YOUR BREAKAGES**

Send us all your broken or cracked Cylinders, Crank Cases, Gear Wheels, Gear Housings or Machine Parts. We will deliver perfect results and **save you money.**

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 Lowest Prices consistent with Best Workmanship.

**PROPER METHODS OF BUTTERMAKING**

Few people trouble themselves about the reason that creamery butter is to be preferred to dairy butter, but by way of introduction to Bulletin No. 53 of the Dairy and Cold Storage Branch, Ottawa, Dairy Commissioner Ruddick furnishes an explanation. Incidentally he also points out that a good deal of damage is done to the trade by inferior dairy butter. The bulletin for which Mr. George H. Barr, Chief of the Dairy Division, is responsible, in concise terms describes the whole process of butter making, tells the utensils that should be used and how they should be used, gives the results of experiments with the separator as regards temperature and variations in speed, deals with the care of cream in cooling and preparing for churning and in pasteurizing gives expert counsel as to salting and working and points to the advisability of attractive packing in parchment paper. He also points out the requirements of the law in branding or marking and supplies practical hints on care of the utensils. Finally, he tells in terse terms how to get the best results in farm dairy work. Both the bulletin and a blue print of the plan for a dairy that is given can be had free by application to the Dairy Commissioner or to the Publications Branch, Department of Agriculture, Ottawa.

**ARE GOOD COWS MISJUDGED?**

Recently three cows that stood side by side were tested for nine consecutive milkings: The first cow had an average test of 3.7 per cent of fat, the maximum and minimum tests being 2.9 and 5.5.

The second cow had an average for the nine tests of 4.2, with maximum and minimum tests of 2.4 and 5.4. The average test for the third cow was 2.6, with extremes of 2.0 and 4.0.


Hence it is evident that the laudable desire to know what a certain cow's milk tests for fat may be defeated entirely if only one sample is run through the machine.

In the light of the examples given above, as well as of hundreds of other instances on record, it is safe to conclude that a fair method is to test a composite sample of five or six milkings taken at intervals when the cow is in normal condition. This plan has given good results in the cow testing work of the dairy division, Ottawa. Write for full particulars, so that your good cows may not be misjudged on an isolated test—C.F.W.

## A. Stanley Jones

**NORTH BATTLEFORD  
Sask Dept. F.**

No other Company sells a machine that will do the work this will at anywhere near the price.



The Original Small Thresher

**I Pay All Freight**  
Write for Time Terms

Write for Free Catalog

<b>28-INCH SEPARATOR,</b> 9 H.P. Engine, Trucks and all Fittings	<b>Cash \$748</b>	<b>24-INCH SEPARATOR,</b> alone, all Fittings	<b>Cash \$355</b>
<b>24-INCH SEPARATOR,</b> 7 H.P. Engine, Trucks and all Fittings	<b>\$672</b>	<b>28-INCH SEPARATOR,</b> alone, all Fittings	<b>\$388</b>

The above prices have been advanced 6% since August 1st.

AS USED BY THE DOMINION GOVERNMENT, MANITOBA AND SASKATCHEWAN, ETC

SEAL OF QUALITY

## No Better Thresher Belts than These

Dunlop Thresher Belts have no superior anywhere. There is no other factory in all Canada better equipped to manufacture Rubber Belting than the Dunlop plant.

Up-to-date facilities, expert workmen, and A1 materials, one and all point to an unexcelled product—

## Dunlop Thresher Belts

"PRAIRIE" and "RELIANCE"

The duck used in the construction of Dunlop Thresher Belts is of the long, hard, closely woven kind.

The curing process takes place under a hydraulic pressure equal to 50 tons in weight.

There is no lost power when Dunlop Thresher Belts are used because they have the maximum of strength, durability and toughness and the minimum of stretch and slippage.

Dunlop Canvas Thresher Belts and Dunlop Agricultural Hose are thoroughly upholding the reputation of the "Two Hands" Line of Rubber Made Goods.

SEAL OF QUALITY

### DUNLOP TIRE & RUBBER GOODS CO., LIMITED

Head Office and Factories: TORONTO

Branches: Victoria, Vancouver, Edmonton, Calgary, Saskatoon, Regina, Winnipeg, London, Hamilton, Toronto, Ottawa, Montreal, St. John, Halifax

### GET ACQUAINTED WITH YOUR ENGINES

WHEN you buy a new tractor, a new automobile or a new gas engine let me suggest that you do not be in a hurry to put the machine to work, or to show it off. Just take a little time and get acquainted with it—and better yet, let the machine get acquainted with you. There is a whole lot more profit and comfort when you do this than when you jump right in, open things up wide, and proceed to let folks "see what you can do."

I don't mean for you to monkey with the machine, and get it all out of whack, and to raise hob generally, but I do mean for you to study the thing from the ground up, and find out just how and why it works.

To begin with, get hold of all the literature accompanying it and study it from beginning to end. You can't know too much about the construction and the manner of care and operation. Everything the manufacturer puts in his book of instructions means something. It is not put there to fill up the book. It is there for you to use. Therefore, study it carefully and be sure that you fully understand every word of it.

It won't help you much if you just sit down and read the instructions through the same as you would read the funny page of the Sunday paper. Instead take your book of instructions on the machine, and as you read each point, look it up on the machine itself, and see that you fully understand just what the instructions mean and how the thing works. And, don't leave one thing until you are fully satisfied that you know how it operates and is cared for.

It is of no use to read three or four paragraphs of the directions and then look at the machine and say to yourself, "Yes, here is the lever G, there is crank F, same as the directions tell about. Now, where is slide B? Oh, yes, here it is," and so on down the list. That kind of studying won't help you a bit when trouble comes, ten miles from a repair shop or a mile and a half from "nowhere."

It is in cases of this kind, this trouble away from help and home, that you wish you had studied the instructions and your machine better. So, just do it now, once and for all, and don't do anything else, no matter how urgent, until you have familiarized yourself thoroughly with that machine, its several parts, functions and peculiarities.

You know that there are a number of bearings in that machine. Then find every one of them and see what each has to do. There must also be some means for lu-

bricating each one of those bearings. There is, and you should know how and where. And you must be so sure of this matter that you can "oil around" if necessary in the dark and not miss a single bearing. If they are anti-friction bearings, you will have to pay attention to them only once or twice a year.

By the time you have fully studied the matter of bearings and their lubrication, you will have learned a whole lot of other things concerning the machine; but don't stop. Keep right on studying the thing, for you don't know half of its parts yet, and when trouble comes it surely will be in one of the things which you skipped when studying the machine.

If the machine is a motor truck or an automobile there is a brake on it, probably two or three of them, and it is your business to know exactly how each one works, how pressure is transmitted from hand or foot to shaft or wheel, and you should also know how to take care of the brake mechanism and how to adjust it whenever it gets "out of kilter."

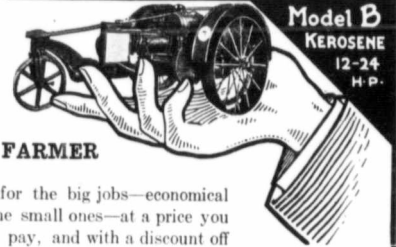
Only a short time ago I saw a man in an automobile which was being towed to a garage just because the oil pump had gotten "out of whack," and the owner didn't understand that particular oil pump enough to fix it. Arrived at the garage a mechanic spread down a tarpaulin, rolled under the car, and in three minutes that oil pump was working perfectly. Had the owner of the car made himself familiar with that oil pump he would have been spared the expense and humiliation of being towed home.

One should learn to take such good care of his machine that it will last for many years instead of wearing out quickly. It is not the work or the intelligent use which wears out a machine. It is the neglect, the running it with this or that needing attention. When you are fully acquainted with your machine it will never need a general overhauling, for you will be able to anticipate repairs and renewals, to make them "just before they are needed."

Furthermore, you will not be afraid of a breakdown at some critical moment, for you know your machine, know it is in perfect condition and don't have to trust to luck or be forced in emergency to "take a chance" that it will pull through the overwork and not go to smash through the failure of some overlooked part or function permitted to get into bad condition through not being fully acquainted with it.

**Twelve Months of this Magazine for \$1.00**

**JUST AN EASY HANDFUL FOR THE SMALL FARMER**



Big enough for the big jobs—economical enough for the small ones—at a price you can afford to pay, and with a discount off for all cash—that's the

## Happy Farmer Tractor

Farmers with big acreages find the Happy Farmer handy for the work where a big tractor would pile up expense. This little fellow gives you plenty of belt power, and 2000 lbs. (or three plows) on the draw bar. Think what you could do with one on your farm.

You can get full information giving you facts about money making and saving—free—if you ask for it.

**J. D. Adshead Company Limited**

225 CURRY BUILDING, WINNIPEG, Man.

## Cushman Combination Thresher

Don't wait until your grain is damaged in the shock—until hundreds of bushels are shelled out and lost—until the rain and snow cut down the grade. Your grain is worth too much money to waste.

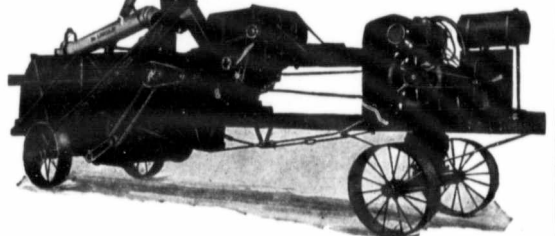
### JUST WHAT YOU NEED

Here is a Threshing Outfit that you and your neighbor can afford to own—that will do your threshing with from four to seven men—just when you want it. No Waiting—No Worry—No Loss.

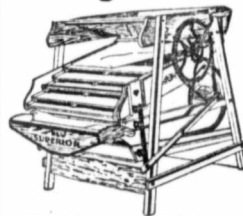
Talk with your Dealer about the Cushman Line or write for Free Catalog

It carries its own engine on the frame, requiring no horses except for pulling it to position.

8 H.P. with Straw Carrier and Hand Feed; 10 H.P. with Wind Stacker and Hand Feed. Equipped with the famous Cushman 3-Cylinder Engines.



## 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 Mountainer Neck Yoke Centres.

COMPLETE THRESHING OUTFIT, in good shape. Will be sold at a sacrifice. 26-horse Waterloo double cylinder steam engine, 28-44 Rumley Separator, Box 66, MacGregor, Man.

WANTED—Gear mounted steam engine, with or without plows; must be cheap and in first class shape. State lowest cash price and particulars in first letter. Apply Box 20, Burnie, Man.

FOR SALE AT BARGAIN—One 46 h.p. 4-cylinder gas tractor, rebuilt, excellent condition, \$1,200 cash. Also one of same second-hand at \$1,000 cash. Apply P.O. Box 178, Winnipeg.

32-50 SAWYER-MASSEY DAISY SEPARATOR, with Ruth Feeder; in good working condition; being complete, \$400.00 cash. Reason for selling, bought larger separator. Apply Bowey & Murray, Munson, Alberta.



# "I Should Worry!"

You'll not need to worry about work-glove satisfaction when you wear the famous

## Two Dollar Knock-Out Glove

Made from selected fire-proof chrome-tanned horsehide. Wax thread sewn seams, reinforced with thumb protector and scuff welt and doubly reinforced with rivets.



ABSOLUTELY THE BEST GLOVE THAT MONEY CAN BUY  
EVERY PAIR GUARANTEED TO GIVE SATISFACTION

The "Knock-Out" JUNIOR is made exactly the same style only it is a Short Glove with string and fastener at wrist.

**P.S.—GET A PAIR TO-DAY!**

SOLD AT ALL STORES

MANUFACTURED BY

**Northland Knitting Co. Ltd.**  
Winnipeg

### "SAWYER" BELTING

The novice's idea of the function of belting is just that a belt is a "belt," but there are few things in power transmission and control that the experienced hand will take greater pains to remove from all apprehension of doubt. The fate of the whole threshing season, the most vital of the twelve months' operations on the farm hangs by the belt.

This is part of the A B C of farm mechanics to the professional thresherman, but not every thresherman is so well grounded on the subject of suitable as dis-

tinguished from doubtful substances and methods used in the construction of reliable belting.

One belting on the Canadian market that has never belied its claims is that known as the "Sawyer" stitched canvas duck. Not only is this belting made of the very best canvas material the mills produce, but its construction is of such a nature that it would seem an impossibility to break it or to fabricate anything of the kind that would grip the pulleys more thoroughly and that would be less likely to slip or get out of alignment.

A special "fool-proof" feature of the "Sawyer" is that the edgings have been doubly reinforced by extra rows of stitches. This will be appreciated by the man who is struggling to "set up" his machine for the day's run finds it scraping the separator or belt guide at one end, or running two or three inches over the edge of the drive wheel at the engine. With the most ordinary care and common sense setting of the Sawyer belting, its manufacturers guarantee perfect satisfaction and a tenure of life to the belt that cannot be outclassed by anything of the kind made. They undertake with every purchase to replace at once any belt proving defective in material or workmanship.



Tommy ("mopping up" captured trench): "Is there anyone down there?"  
Voice from dug out: "Ja! Ja! Kamrad!"  
Tommy: "Then come out here and fraternise."

## WATER IS LIFE

CLEAN WATER IN THE HOUSE, BARN AND FIELD IS ONE OF A FARM'S BEST ASSETS.

### 'Jumbo' Galvanized Steel Tanks

Corrugated and Reinforced

FOR ALL PURPOSES. Are built for long service. The BEST MADE, THE BEST LOOKING, THE LONGEST WEARING TANKS ON THE MARKET. If your dealer does not handle the "Jumbo" Line then write direct to our nearest factory. Our "Jumbo" Granary has never failed to give satisfaction.



WINNIPEG OR REGINA



### PACE HARRISON Ltd.

WINNIPEG. General Agents

### Yorkshire Fire Insurance Co. of England

LIVE STOCK DEPARTMENT  
SPECIAL FARMERS' ACCIDENT POLICY  
FIRE INSURANCE

AGENTS WANTED

## Better Farm Homes

By Professor L. J. SMITH, Dept. of Agricultural Engineering,  
Manitoba Agricultural College. Plan "C"

It was hoped that the Farm Home Competition would give some good plans of small houses, but very few plans were entered of homes smaller than 28ft. by 30ft. There is, however, a strong demand from the newly settled districts for a small modern home, and Plan "C" has been gotten out in

forms come, and for various social events. It also affords a good quiet place to put the youngster for his daily nap, and thus avoid climbing to the second floor. If desired, it can be used as a regular bedroom.

The front hall and stairs are generally unnecessary in the smaller country home where the



the hope that it will meet this demand.

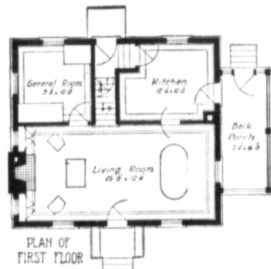
The small, two-storey house is the architect's most difficult problem, when one is anxious to secure a good external appearance, as well as economy. A study of the perspective of Plan "C" will convince the reader that the architect's most difficult problem.

In working out these plans, the main effort was to secure an economical a house as possible without sacrificing convenience. The house is 24 feet deep, and has a 27 feet frontage, which will best face the south. The gambrel roof gives a pleasing appearance, and, at the same time, a very economical and compact style of construction.

The first floor has but three rooms. The large room across the front gives a convenient and comfortable living and dining-room. A fireplace in one end would add to the cheerfulness of the room, and under no circumstances should be omitted. The dining table can be run lengthwise of the room when it is desired to accommodate a large number, as at harvest, or a Christmas or New Year's dinner, and, by removing the table altogether, a large space is available for parties and other social gatherings.

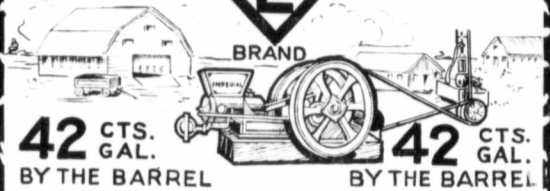
The 9ft. 8in. by 10ft. general purpose room off the living room will be handy for sewing, for use in case of sickness, or when visit-

front door is not used to the extent that it would be if it were a city home. The stairs rise directly out of the centre of the living room, and are much more convenient to the kitchen than the ordinary front hall stairs. It also makes a very convenient ar-



range for the cellar stairs. Four steps lead from the kitchen down to a landing which has an outside door at ground level. By this arrangement anything going into or coming out of the cellar does not have to pass through the

## GASOLINE ENGINE OIL



### BUY IT BY THE BARREL (42 GALLONS)

This gives you the opportunity to lay in your supply of Gasoline Engine Oil, while the price is still "within reason."

Reference to the EATON 1917-18 Fall and Winter Catalogue will show that we have not followed the advance in prices in proportion to the rising costs of lubricating oils during the past year.

For prices on less than barrel lots see our Catalogue.

**DIAMOND E BRAND GASOLINE ENGINE OIL** is recommended for all types of internal combustion engines, whether tractor or stationary, gasoline or kerosene. A high grade oil that will not carbonize or form a gum, as do low test oils. Gives splendid satisfaction with either gasoline engines or oil engines.

We are also making correspondingly low prices on Harvester Oil, Steam Cylinder Oil, Cream Separator Oil, Hard Oil and Castor Oil.

PROMPT SHIPMENTS AS USUAL

THE **T. EATON CO** LIMITED  
WINNIPEG CANADA



### SILKSTONE your Walls and Ceilings

Sanitary walls and ceilings, tastefully soft in finish and without gloss, are no longer an expensive luxury. Choose a permanent coating that can be washed with pure soap and water. Twenty-five handsome shades of

### SILKSTONE Flat Wall Colours

make possible any decorative scheme desired. A beautiful, lasting background in keeping with any furniture. The *Silkstone's* agent will tell you all about it.



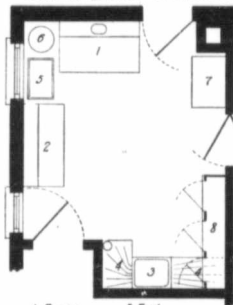
G. F. Stephens & Co., Limited  
Paint and Varnish Makers  
Winnipeg Canada

TWELVE MONTHS OF THE BEST FARM PAPER PUBLISHED FOR ONE DOLLAR



kitchen. The advantages are obvious. The cellar stairs lead to about the centre of the cellar, making all parts equally accessible and allowing for an easy arrangement of the basement. A full basement should be planned for. In it will be placed the furnace, wood and coal storage, a vegetable room, fruit storage, soft water tank, pneumatic tank and pump, the lighting system, space for drying clothes in winter and laundry and dairy arrangement, if desired. A basement can be far better utilized than attic space, and is much more accessible.

PLAN OF LAYOUT OF KITCHEN



The kitchen is not large but is conveniently arranged. The sink is in the proper position for washing and putting away dishes, and is conveniently located for use in cooking.

The outer kitchen door is planned to have glass in the upper half. The position of the doors and windows makes possible plenty of ventilation to keep the kitchen cool in summer, a most important consideration.

The large kitchen porch will be especially appreciated in summer. Here, out in the cool fresh air, a great deal of the kitchen work can be done; here, the youngster can play; here, also, a table can be provided, and the family can eat their meals outside in warm weather. A summer's experience of this sort makes one very loth to eat inside even when fall comes.

No house is considered modern in these days unless it has a sleeping porch. This can be provided above the kitchen porch by having a door off the bath room. It is planned to have a gas pipe frame work upon which canvas may be stretched for protection from the weather, while the sleeping porch is being used. Some might prefer to have the door to the porch open off the adjacent bedroom, rather than off the bathroom.

The upper hall is three feet wide and does not take up much space. The window at the stair landing gives ample light

and ventilation. A linen closet is provided for off the hall.

A large bath room is conveniently located at the head of the stairs, and being above the kitchen is most economically located from the plumbing standpoint.

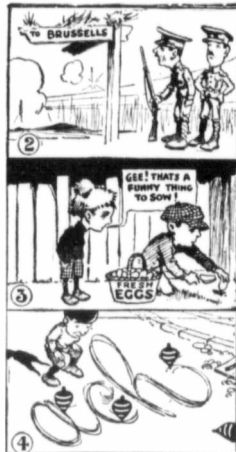
There are two large and one small bedrooms with ample closets which will appeal to the housewife.

To many the plans might seem lacking in bedroom space. The room on the first floor can be used by the family when visitors come, for the modern davenport is an equally good bed, thus the old spare bedroom is dispensed with.

# What Did We Plant in Our Vegetable Garden?

## Vegetable Garden?

To help win the war we must all produce, so every patriotic Canadian has a vegetable garden this year. We have a fine assortment of vegetables in our garden, and if you will study the pictures at the right you may be able to discover what we are growing. Each of the pictures represents a common vegetable that you all know. Here are two examples from the series. Our artist drew and we will tell you that No. 1 is Cauliflower (Call-eye-Flower) and No. 8, Beets (Bee-eats). Now see if you can solve the rest and when you have them all, write your solutions on a sheet of paper and send them to us.



What vegetables do these pictures represent?

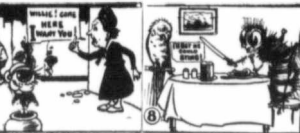
WHEN your answers to this interesting puzzle are received we shall gladly mail you without cost a sample copy of the latest issue in order that you and your friends may become acquainted with this great new publication and realize the place in Canadian Home Life that RURAL CANADA now occupies.

It is entertaining as well as instructive. It abounds in fine short stories, timely articles, fashions, embroideries, crochet work, recipes, a children's page, a family doctor and many other fine features. Its editorials are inspiring and uplifting. In short, to know RURAL CANADA is to love it. You and your friends will be glad to make the acquaintance of so bright, interesting and good a magazine.

### Follow These Simple Rules Governing Entry to the Contest

WRITE on one side of the paper only. On one sheet of paper put your answers to the puzzle pictures, with your full name and address, (stating Mr., Mrs. or Miss) in the upper right hand corner. Anything other than this must be on a separate sheet of paper.

Boys and girls under ten years of age are not allowed to send answers to this Contest, because



### This Contest is Free of Expense to All

YOU do not spend a single penny of your money, nor will you be asked to buy anything in order to enter this great Contest and win the Chevrolet Car or a fine prize. The Continental Publishing Co., Limited, one of the strongest and best known publishing firms in Canada is conducting this interesting Contest in order to quickly advertise and introduce "RURAL CANADA for Women" the wonderful new magazine for Canadian Farm Folk and lovers everywhere.

RURAL CANADA is different entirely from any other Canadian Farm Paper, because it is edited and published mainly for the women folk in our Canadian farm homes.

As soon as your answers are received we shall write and tell you how many of the names you have solved correctly, and send you free a copy of this month's fine issue of RURAL CANADA. Then when you know your standing for the big prizes you will be



What vegetables do these pictures represent?

asked to help us advertise and introduce RURAL CANADA in your neighborhood by showing your copy of the new magazine to just four of your friends and neighbors who will appreciate the worth and high purpose of RURAL CANADA and want it to come to them every month. State your willingness to accord us this simple favor when you send your answers. It will only require a few minutes of your time and you are guaranteed and will be sent at once a big cash payment or valuable reward for your trouble. If you wish we will gladly send you extra sample copies to leave with your friends to read.

later on we intend to have a fine contest for our boy and girl friends. Employees of this company are absolutely debarred from competing. To ensure absolute fairness and impartiality in awarding the prizes, the properly qualified entries will be judged by a committee of three well known gentlemen, having no connection whatever with this firm, and contestants must agree to abide by their decisions. The prizes will be awarded to the duly qualified contestants whose entries have the greatest number of correct or nearly correct names and are consid-

ered by the judges to be neatest and best written, (proper spelling, punctuation and style of entry also being given consideration). A contestant may send in as many as three sets of answers to the puzzle, but only one set may win a prize and not more than any one prize will be awarded one family or household. The Contest will close December 27th, immediately after which the judges will award the prizes. Send two-cent stamps to pay postage on your free sample copy of RURAL CANADA, prize list, etc.

1st PRIZE

5 Passenger Chevrolet

And More than \$1,000.00 in Handsome Prizes to be Awarded

THE BIG PRIZES include this magnificent \$750.00 Chevrolet Car, a \$350.00 Upright Piano, a Dandy Sheridan Pony and Cart, a High Grade Bicycle, \$60.00 Clare High Oven Range, Singer Sewing Machine, Phonograph and Records, Waltham Watches for men and women, Standard Cream Separator, 100 lb. Washing Machine, Perfection Oil Range, Books, Cameras, Bread Mixers, Mantle Lamps, Sporting Rifles, and a host of other big valuable prizes too numerous to mention here.

WE WILL SEND YOU THE BIG COMPLETE ILLUSTRATED PRIZE LIST

Address your solutions to  
**THE CONTEST EDITOR, RURAL CANADA, 220 CONTINENTAL BLDG., TORONTO**

5 Passenger Chevrolet

Touring Car

And More than \$1,000.00 in Handsome Prizes to be Awarded

THE BIG PRIZES include this magnificent \$750.00 Chevrolet Car, a \$350.00 Upright Piano, a Dandy Sheridan Pony and Cart, a High Grade Bicycle, \$60.00 Clare High Oven Range, Singer Sewing Machine, Phonograph and Records, Waltham Watches for men and women, Standard Cream Separator, 100 lb. Washing Machine, Perfection Oil Range, Books, Cameras, Bread Mixers, Mantle Lamps, Sporting Rifles, and a host of other big valuable prizes too numerous to mention here.

WE WILL SEND YOU THE BIG COMPLETE ILLUSTRATED PRIZE LIST

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**THE CONTEST EDITOR, RURAL CANADA, 220 CONTINENTAL BLDG., TORONTO**

Then, again, often the farm hands live in a separate house, or the hired man be married and live in the old house and board the other men, thus giving more privacy to the owners of the farm, and lifting a big load from the shoulders of the housewife.

With a large house on the farm, the time often comes when the young people have gone to homes of their own, and then the big place with its extra rooms and upkeep becomes a burden instead of a pleasure.

Working drawings, showing front and two side elevations, sectional elevation, basement plan,

exterior details (6 sheets, 14in. by 24in.), together with specifications and bill of material, can be had by writing the Department of Agricultural Engineering, Manitoba Agricultural College, Winnipeg. This material is sold at a nominal price with no intention of securing a profit, but to cover the cost of the reproduction of individual copies. The cost to applicants residing in Manitoba is \$3.00, and for those residing elsewhere \$5.00. Applicants, when sending for this material, should allow plenty of time for the getting out of copies of the specifications and bills of material.



## Next Wheat Crop BILLION BUSHELLS

U. S. Government issues recommendations for increasing Small Grain Crops for 1918

Immediate war agricultural program announced, August 8th, by Secretary of Agriculture, who estimates winter wheat to be sown at 47,337,000 acres; spring wheat 19,000,000 acres, and rye 5,131,000 acres

Estimated yield of winter and spring wheat over one billion bushels, and rye over eighty-three million bushels

## The Grain Saving Wind Stacker

WILL DO ITS PART IN SAVING THIS GRAIN

Supreme effort will be made in Canada to increase crop yields, and a large wheat acreage is expected. Both countries must take part in feeding our allies

This grain must be saved and can be saved by using the automatic double-acting

## Grain Saving Wind Stacker

on your threshing machine. It traps and saves the grain wasted by the threshing machine; it **PUTS YOUR GRAIN IN THE SACK**, and does not waste it in the stack

## The Grain Saving Wind Stacker

SAVES the grain; STACKS the straw; eliminates BACK-LASH; runs with LESS POWER and SAVES fuel; is superior to all stackers, and COSTS NO MORE than an ordinary wind stacker

**SAVE THE GRAIN!      SAVE THE GRAIN!**

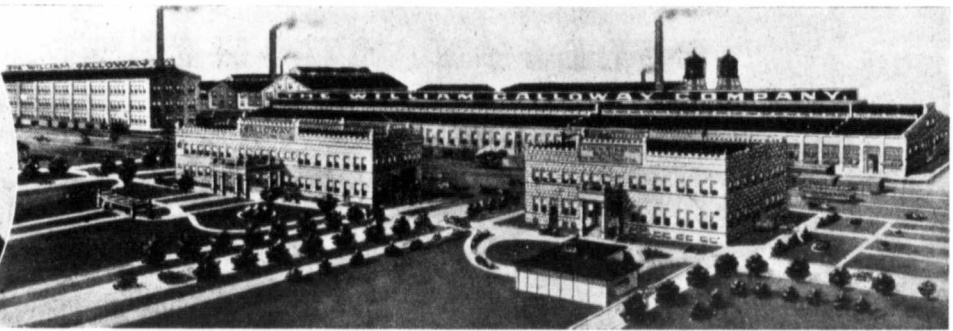
Obtain Catalog from threshing machine manufacturers, illustrating and explaining how **THE GRAIN IS PUT IN THE SACK** and not wasted in the stack with the

## GRAIN SAVING WIND STACKER

# The Indiana Manufacturing Company

INDIANAPOLIS, INDIANA, U. S. A.

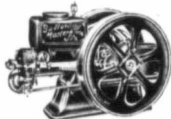
# The Great Galloway Chain of Factories



## The Story of a Farmer Lad

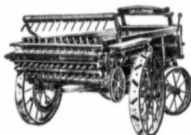
**S**EVENTEEN years ago a farm boy living near Berlin, Iowa, answered a windmill advertisement. Following up the advertisement he secured a job as an agent selling windmill springs. He traded for a horse and bought a buggy for \$12.50 and drove from farm to farm calling on the farmers.

The young man was six feet three inches tall, broad of frame, pleasing of countenance, optimistic of disposition, amply courageous and twenty-two years of age. His name was William Galloway. He sold windmill springs successfully. He knew his brother farmers, knew how to mix with them, and had a good article. After a few months the young man met an implement dealer, who offered him a job at \$25.00 per month and board. He took the job. Again the young salesman made good. Presently the firm branched out and began to do a wholesale business in feed grinders, buggies, and other implements. The new clerk was sent out on the road to call on other dealers. He made good at that. He took to implement merchandising in all its branches as a good bird dog does to hunting.



To-day Bill Galloway manufactures and sells direct to the farmer more gasoline engines than any other factory in the world. The above is a picture of his famous "Masterpiece Six."

After William Galloway had spent a couple of years on the road the Big Idea finally came along. It occurred to the future president of the present Wm. Galloway Company, of Waterloo, Iowa, that he would like to own an implement factory and sell his output direct to his friends, the farmers. He was not content to merely sell implements—he wanted to make them. He had the instinct of the manufacturer. As a boy on the farm he had made over and improved various implements with which he had to work. One of these inventions—a harrow cart, he is still making to-day.



Galloway thought this idea over for some time, saved his salary, laid plans, and in 1902 opened up a small office in Waterloo, Iowa.

And it was Bill Galloway that made the Manure Spreader famous—a machine of many exclusive patents, including the perfected force feed and endless apron.

make his implements for him. His ability as a salesman proved in good stead and the business grew so fast that in 1903 the first small factory of his own was started. It was little more than an assembling plant; the castings and other small parts of the implements were still being made outside. Galloway was soon selling direct from his headquarters to farmers all over the country. From the beginning he depended upon advertising for his business. He backed up his advertisements with good implements and low prices.



The new Galloway light running and close skimming separator has been a big help in the building of a vast business—it's a wonderful machine at a low price.

To-day the Galloway plant, as shown above, is the largest factory in the world manufacturing and selling Gasoline Engines, Cream Separators, Manure Spreaders, and many other farming implements direct to the farmer—without an added price being added for the benefit of the jobber and dealer.

The big Galloway Mail Order House at Princess and Bannatyne Streets, Winnipeg, is Mr. Galloway's latest venture, and that it is proving a success is evidenced by the fact that more than 30,000 Canadian farmer customers were added to his books from the last Spring's catalogue.

His new big Fall catalogue, which is shown on the opposite page, is the best yet, and contains practically everything needed for the farm or home.

In this book you will find everything in the line of wearing apparel for men, women and children.

There is clothing, underwear, suits, dresses, skirts, overcoats, whitewear, hats, caps, hosiery, gents' furnishings, books, stationery, silverware, and the finest and most complete line of shoes ever shown in a mail order catalogue.

And as Mr. Galloway would say, "My Patriotic Prices make customers of everybody."

The big catalogue is free for the asking, and it is well worth the trouble of writing for to every man and woman in the great Dominion.

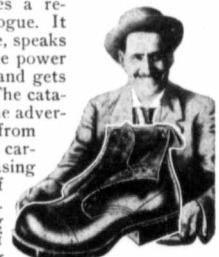
Wm. Galloway dominates his \$7,500,000 organization with a remarkable personality. As approachable and congenial as a farmer, absolutely honest, as keen visioned and broad-minded as any business executive in the country, as unostentatious as a boy—probably more so than when he left the farm. He wins the confidence and support alike of his employees and farmer customers. He neither chews, smokes, drinks nor swears, and is a man through and through. He is a great big dynamo of energy that seems never to run down. His work is play, and he is playing at it practically every minute in which he is awake.



Even the children are taken care of in the Big Galloway Fall catalogue, which is free for the asking.

He takes plenty of time away from his office, at his big farm, fishing, with his family or elsewhere, but he's liable to hatch out a new idea for the business any moment.

The Wm. Galloway Company issues a remarkable catalogue. It wins confidence, speaks with irresistible power as a salesman and gets the business. The catalogue and all the advertising have, from the beginning, carried the pleasing personality of Wm. Galloway. The latch string to the doors of the Winnipeg house is always out to all visitors to Winnipeg, and you are all invited to make this place your headquarters when you visit our city. Galloway always bids you welcome.



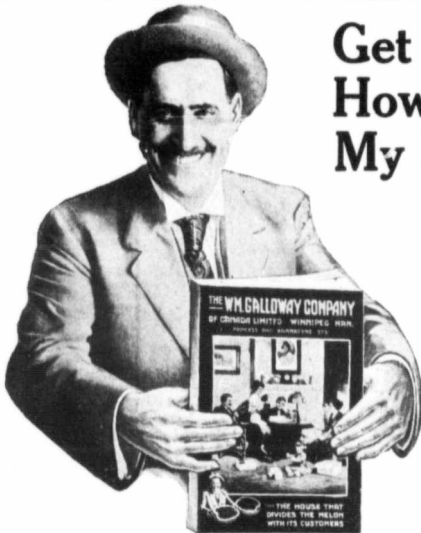
His latest hobby is a shoe that he has built for farm wear, and to use his own expression, "It's a corker."



Not satisfied with his achievements in the implement game, Mr. Galloway's Fall catalogue shows everything in the line of wearing apparel for men, women and children.

THE BIG GALLOWAY FALL CATALOGUE OF PATRIOTIC PRICES IS NOW READY FOR MAILING. IT'S A WONDERFUL BOOK IN PRICE MAKING, AND SHOULD BE IN THE POSSESSION OF EVERY FARMER AND HOME IN THE DOMINION. WRITE FOR IT. IT'S FREE.

# WAIT! Don't Pay the Excessive Prices Now Charged for Everything



## Get My Big Free Book and Learn How I Have Protected You With My Patriotic Prices

High prices are hitting the farmers hard, and they are going to hit you harder. You are compelled to pay more and more for everything you buy. But I am going to protect you as I always have protected my farmer friends. I am going to give you patriotic prices that mean a big saving to you—and give you besides the highest quality goods possible to obtain or build. Don't take my word for it—just send for my NEW BIG FREE BOOK AND JUDGE FOR YOURSELF. You Won't Regret It!

## I Don't Care What Line You Are Interested In I Will Save You Money

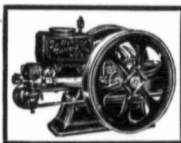
I sell everything for the farm and home. General Merchandise, Wearing Apparel of every kind—Clothing, and Underwear, Boots and Shoes—to say nothing of the Great Galloway Line of Masterpiece Gasoline Engines—the wonderful Galloway Sanitary Cream Separators, and the Galloway Low Down Crop Producing Manure Spreaders.

Read Every Word on This Page—  
There's a Message Here For YOU

### To The Women Folks

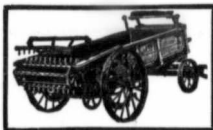
Don't forget that more than half of this book is devoted to YOUR needs. It contains the same bargains—the same big savings for YOU that it does for the men who need farm machinery. You will find here everything you or your family needs to wear, and the prices are such that you will be glad you sent for the book. More than 30,000 families bought from my Spring book and were glad of it, and so will you be if you give the Galloway Way a trial. Send for the book to-day and become a satisfied Galloway customer.

### Let Me Save You \$50 to \$200 on a Galloway Engine



They are masterpieces of POWER and EFFICIENCY. A size for every purpose, 11 h.p. to 16 h.p. The following superior features are good reasons why you should choose a Galloway engine: Large bore, long stroke, valves in the head, Hercules Cylinder head, Masterpiece Ignitor, Economy carburetor; no overheating; perfected oiling; improved fuel feed. Mail the coupon now and learn the truth about gasoline engines.

### Get My Price on a Galloway Spreader—Big Crop Maker



Many styles and sizes, each one fully guaranteed. Read these features that make for strength and efficient service: Endless apron. Force feed. Double chain drive. All-steel gear. Steel tongue; and many other exclusive features. Very light draft, and large capacity. Read all about how it is made in big catalogue. I have one for you—send name and address.

### I Can't Begin to Tell You Here What This Book Means to You

But take my word for it—it's worth many times the minute it takes to write for it. You have all been complaining about high prices and the way everything is continually going up. Now here is a chance to save. Just fill out the coupon and get this book of Patriotic Prices ABSOLUTELY FREE.

The Wm. Galloway Co. of Canada Limited  
DEPT. 17 WINNIPEG, MANITOBA

Here's the Machine that Every Farmer in Canada Needs Today

### Galloway's New Sanitary Cream Separator

It beats the best in every test. That's the real proof of my separator quality. The highest-priced separator you know doesn't run any easier, skim any closer or last any longer. Test after test by thousands of farmers have proved it. A high price doesn't mean the best separator. Do you wonder where that extra money goes? The difference in cost between my low price and the price you pay for other high grade machines. I'll tell you in my book. I'll tell you where every dollar goes. My big book contains separator secrets that you ought to know. SEND FOR THE BOOK TO-DAY. Learn all about separators.

When you buy the Galloway you save one-half because you deal direct with me, the manufacturer. I make this new Galloway Sanitary Separator complete in my immense factories. You buy it straight from the maker. The half saved stays in YOUR POCKETS and you get the BEST SEPARATOR made besides.

### Sold to You on Trial—Test it for 180 Milkings

Yes Sir! Test it for every separator point. Test it alongside the highest priced separator you know. That's what thousands of my separator customers do, and they come right back and say my new sanitary beats them all. But take nobody's word. TRY IT FOR 90 DAYS YOURSELF. Then if it isn't just what I claim—ship it right back. I'll pay the freight both ways. Its clean, perfect skimming will astonish you. You will marvel at the ease with which you can operate and clean it. Every part is rounded—no sharp corners for dirt to gather. It runs true in perfect alignment—always—because one casting—the gear case—Supports all the gear shaft and both bowl-spindle bearings.

But let the Book tell you all about it—sit right down now and send for it



90 Days' Free Trial

The Lightest Running, Closest Skimming Machine Possible to Build.

The Peer of Them All.

### PATRIOTIC PRICE COUPON

Mail to me today—NOW

WM. GALLOWAY CO., Winnipeg, Man.

I am interested. Please send me your new book of Patriotic Prices as advertised in the Canadian Thresherman and Farmer

Name \_\_\_\_\_

Town \_\_\_\_\_

State \_\_\_\_\_

I am specially interested in \_\_\_\_\_

## MILKING BY GASOLINE POWER

By A. S. Atkinson

**I**N Australia and New Zealand the milking machines operated by gasoline motors have solved the labor problems, and where dairying is carried on extensively the machines are given credit for it. They are ahead of the United States in this respect, and something like sixteen different kinds of milking machines are manufactured there. That the milking machine is bound to become an important factor in the future development of dairying in this country, now that the gasoline engine is making its general appearance on our farms, is evident to anyone who has studied the problem. They save in dollars and cents, solve perplexing labor problems on the farm and make for greater cleanliness.

Here is a concrete example of what they have done on one farm in Indiana, owned by Mr. Hagan of Greenfield. I visited the place after the milking machines had been in operation a number of years, and the conclusions were drawn from actual tests and experiences. With sixty cows, a milking machine outfit, consisting of two machines costing with vacuum pump complete \$300, pipe and labor of plumbing \$65, and a 4-horse gasoline engine at \$200, was installed at a total outlay of \$565. The cost of the outlay was unnecessarily large, for a smaller and cheaper engine would have answered the purpose just as well. But the larger engine was installed to pump water and operate a cream separator and grindstone.

The machines are operated by a partial vacuum, amounting to about one-half the usual atmospheric pressure. The vacuum is produced by a vacuum pump, driven by any reliable source of power, the amount of which depends upon the number of cows to be milked or number milked at one time. Each pulsator milks



NO DOUBT ABOUT IT

Dugal: "I doot, Tammas, theres' some informeshun that man Lloyd George has got that we havena got."

two cows at a time, and pieces of hose connect two cocks on the pulsator with two groups of four teat cups each. The metal teat cup with its rubber mouthpiece fits over the teat and is held in place by the suction. The pulsator alternately makes and breaks the vacuum, first drawing the milk from the teat, and then allowing a fresh supply to enter. This exactly imitates the calf's sucking, and is a more natural action than that of the hand.

Two men milked, fed and strip-

ped forty cows that were first tried with the machines. In fact, one man did the milking, while the other was feeding, stripping and cooling the milk. The time required for this work at the beginning was about one hour and a half, but after a week's experience it was cut down to one hour and fifteen minutes. After using the machines for several years on fifty to sixty cows, the following conclusions were reached:

Labor of milking was reduced

about one-third. Time of milking cut down to about one-half. A more sanitary milk was produced, milk that contained no dirt, bad tastes or odors. All the drudgery of hand milking was removed. The labor problem was simplified because it is much easier to get help when the machines are used. A larger number of cows can be kept with the same amount of labor. Cows with short teats can be milked as easily with the machines as those with long ones, and the cows,



## Horses, Cattle, Cigars and Life in General

**CIGARS** might be called "the Currency of Friendship." When one man does something for another, lends him a disc harrow for instance, or helps him drive his cattle to town, he says, "Thanks, Joe. Come on in here and I'll buy you a good cigar."

"Thanks, Joe," doesn't seem quite enough. Money is out of the question. A good cigar fits the case exactly.

Amongst cigars Tuckett's MARGUERITE and Tuckett's CLUB SPECIAL are "par value." All over the Great Canadian West men acknowledge little (and big) acts of friendship with them.

When a man buys you a Tuckett Cigar, and you light up off the same match, it's a boost for mutual understanding and fellowship.

Tuckett Cigars were sold in the Canadian West when buffaloes were thicker than gophers, and when there wasn't ten miles of fence between Fort Garry and Lac La Bische.

Tuckett Cigars were good then, and they are good now.

It's not easy to keep the quality of a cigar up to standard as the demand grows. [It's harder to farm a whole section than a half—and do it well. If you're not careful the weeds get in, or your land is not prepared right.]

But it is a principle of this business, that no matter how the demand for MARGUERITE and CLUB SPECIAL

Cigars grows, the quality must be maintained. *And it has been and is.*

Why don't you have a box of cigars on the place? Then when you sit down for a quiet evening to read you will always have a fresh, unbroken cigar to keep you company.

The next time you are in town, buy a box. Both these cigars usually sell 3 for 25c.—but by the box of 25 or 50, they are cheaper. There is hardly a general store, hotel, restaurant, cigar store or barber shop in the North West where these cigars are not for sale. Make a note on your shopping list to get yourself a box the next time you are in town.

### \*P.S.—

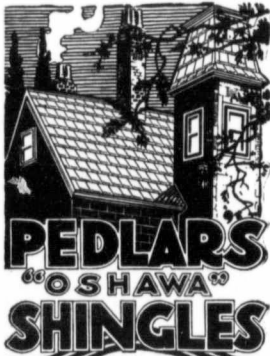
Did you ever happen to smoke a Tuckett PREFERR'D PERFECTO? It sells for 2 for 25c. It's a big, handsome cigar, made of the finest imported leaf. A little too good, perhaps, to be smoked when you are riding or driving. It fairly fills a room with a fascinating, delicious aroma.  
\*Perfect Smoke

**THE TUCKETT TOBACCO CO., Limited - Hamilton, Montreal, London, Vancouver**

Makers of Fine Cigars, Tobacco, Cigarettes, all well and favorably known in the Great Canadian West.

Western Distributors: TEES & PERSSE, Winnipeg, Calgary, Saskatoon, Regina, Moose Jaw, Edmonton. 2





**PEDLAR'S  
"OSHAWA"  
SHINGLES**

THE value of your home is judged most often by the wear-resisting qualities of the roof. Get permanence and security into your roof and you add a definite measure of value to your home. PEDLAR'S "OSHAWA" SHINGLES give you both, at small cost. Made of specially tested galvanized iron—cannot rust or rot or break away. Easy to put on. Locks weather-tight on all four sides. If you want your home to remain more valuable to you and others for years, it's a time you Pedlarized your roof with "OSHAWA" Shingles. Write for "The Right Roof" Booklet CT to-day.

THE PEDLAR PEOPLE, LIMITED  
Established 1861  
80 Lombard Street, WINNIPEG  
Executive Offices and Factories: Oshawa, Ont.

Branches: Regina, Moose Jaw, Calgary, Edmonton, Vancouver

Made In Two Styles



**For Sale**

**FOUR**—Four Cylinders, Four Cycle, Waukesha Motors, 4 1/4 x 5 3/4-inch Cylinders, with Carburetor and Magneto. New, 25 horse power. Price \$260.00 each.

**Manitoba Bridge and Iron Works Limited  
WINNIPEG**

**CLASSIFIED**

**EXCHANGE QUARTER-SECTION** for small threshing machine. George Wyer, Clearwater, Man.

**WANTED**—To hear from owner of good farm for sale. State cash price, full description. D. F. Bush, Minneapolis, Minn.

**PATENTS: CANADIAN, FOREIGN**—Egerton R. Case, Patent Solicitor, Temple Building, Toronto. Valuable booklets free.

**HIGH GRADE SHEET MUSIC**—The entire stock of a wholesaler, all attractive selections, biggest values; five assorted copies 25c., 14 for 50c. Order quick. They won't last long. Home and Office Supply Co., Music Dept., Montreal.

**Twelve Months of this Magazine for \$1.00**

after they get used to it, seem to prefer this method to hand milking, and kicking cows are often cured of this habit. By comparing milk records of each cow, it was shown that the machines got as much out of them as by hand method. In hot weather milking is made comfortable, and in cold weather the machines work just as well with a little precaution against extreme temperatures. It is not necessary to begin milking as early in the morning to get through in time. In a pinch one man can milk fifty or sixty cows by himself, making him in an emergency absolutely independent of the vexed labor problem.

The dairy problem is vexing enough in regions where the hired help is always an uncertain factor, and anything that will help solve it is a great boon to the farmer. The dairyman who handles only as many cows as he can attend to personally cannot make a living at his business, or a pretty poor living, and consequently he must depend upon machinery to help him out. Twenty cows is about all one man can handle, working over hours, and slaving hard morning and night at the hand milking, but with machines he can double the number and still do less work and in a shorter space of time. One hired helper can do the same, that is, double the number of cows he could handle by the hand method.

Forty cows to a man with the milking machine is common, and some, where conditions have been properly organized, can average fifty and sixty cows per man. When this can be accomplished right along there is money in dairying. A good deal depends upon how the gasoline motor is employed for other work as well as for milking. It should do all the pumping for the stock, and should be used for running the cream separator. Anything short of this is limiting one's possibilities.

Dairying reduced to a business pays. Conducted in the old haphazard way, it often proves a dead failure. To attempt to do it to-day without some simple but reliable power is much like stripping a factory of all machinery and returning to hand operation. Agriculture is committed to machinery to-day just as much as manufacturing, and we cannot go back to the old style without losing out. The gas engine has truly made the farmer a better business man and a better manufacturer, and the dairyman is no exception. Milking by machinery for him is just as necessary as plowing by machinery is to the grain farmer.

**Plow Faster and Deeper!**

Convert your Ford into a real Tractor that is guaranteed to do the work of four big farm horses. Put more acreage to work, get bigger crops—plow deeper and faster—by converting the wonderful power of your Ford which is used for speed into pulling power at slow speed, and apply it to the work which you have to do on the farm.

**\$255.00 and a Ford Car make a Staude Mak-a-Tractor**

**STAUDE  
Mak-a-Tractor**

**Plows 5 to 7 Acres Per Day**

Staude Mak-a-Tractor easily plows from five to seven acres a day. The best you can do with horses is to plow about four acres a day. Think of the saving in time in plowing 100 acres. It takes 25 days for four horses to do the work. With Staude Mak-a-Tractor you can do it in 15 days—a net saving of 10 days on 100 acres. Add to this the cost of your own time and cost of labor for those ten days. You will be amazed at the rate with which you get all your farm work done as soon as you put your Staude Mak-a-Tractor to work.

**Plows Deeper**

Not only with the Staude Mak-a-Tractor can you accomplish the work of plowing your farm much faster than you can ever do it with horses, but will plow it deeper—turn up the rich sub-soil. In plowing virgin sod the Staude Mak-a-Tractor with two bottom gang plow has plowed six inches deep. With a 14-inch gang plow has plowed eleven year old timothy sod seven inches deep, which you know is a six-horse job.

**STAUDE RADIATOR FREE**

To prevent any possibility of overheating, we have designed, and supply free with every purchase of a Staude Mak-a-Tractor—a wonderful efficient Staude Radiator, six times as efficient as the Ford Radiator.

We also furnish without any additional expense to you a wonderful patented force feed oiling system. It entirely does away with lubrication difficulties both from the touring car and the tractor.

Write for full particulars to:

**Western Canada Auto Tractor Co. MOOSE JAW, Sask.**



The Finest Engine made is the most expensive of "WHITE ELEPHANTS" if it is not equipped with a **Perfect Injector**



**THE INJECTOR FOR ALL CONDITIONS IS THE**

## Desmond Model "U"

Model "U" is flexible, and will do anything an injector is expected to do and do it perfectly. Starts low at 20 to 25 and works high to 175 lbs. The Model "U" will fit all connections. There isn't a single awkward feature about it; no "Rights and Lefts," "Fronts and Backs." The two piece body connected with a Union Nut performs the trick. You loosen the nut, turn the connections to meet your piping at whatever angle is most convenient. No need to wait until your injector can secure an injector to fit your piping. If he has but one Model "U" in stock it is a dead certainty it is the right one.

Special high pressure injectors with a range from 60 to 225 lbs. can be furnished when desired. The Model "U" lifts water 25 feet; handles water at 130 degrees and delivers to the boiler at almost 212 degrees.

Absolutely automatic, it will not "buck" or "break" under any circumstances. The drip cocks of the Model "U" permits draining the injector and piping in freezing weather and makes convenient place for drawing hot water when in operation.

Every injector is thoroughly tested before leaving our hands and carries an unqualified guarantee to do perfect work under any test. If your dealer cannot supply you, write us direct and give us his name.

We will see you are supplied.

**DESMOND STEPHAN  
MANUFACTURING CO.  
Urbana, Ohio**




## Investment Notes

(Concluded)  
By MARK LANE

It is very essential that the individual interested in investments should have a general knowledge of the main rights and conditions pertaining to stocks and bonds, otherwise a contingency may arise which might put an entirely different complexion on the matter. The following definitions and classifications, stripped of their customary technicalities, are offered accordingly.

**First Mortgage Bonds**—These are issued by the larger concerns to secure fixed capital at approxi-

assets are concerned the bondholders rank ahead of the ordinary creditors and the shareholders. Usually a sinking fund is created, into which the company pays to the trustee for the bondholders such amount annually as will with interest accrued amount to the total of the bonds issued, when they mature. The sinking fund moneys may be invested in trustee securities or in the redemption of the company's own bonds. There is no harm in enquiring periodically if the fund is being

### Don't Forget!

*Insure your crop against fire the day it is at risk. The price will stand the premium and you would hate to face a loss uninsured.*

mately a mortgage rate and as the bonds usually run for at least fifteen years the company's financial position is rendered more stable than if it carried a similar liability in five-year mortgages, maturing at odd periods. The investor's security is a trust deed or mortgage covering the first assets in favor of a trustee for the bondholders, and as far as those

kept in good standing in accordance with the trust deed.

**Preferred Stock**—Holders of preferred stock rank ahead of ordinary shareholders as to dividend and realisation of assets, but unlike mortgage bondholders they are subject to claims of creditors. This stock is usually issued to secure needed capital from outsiders who would not likely take the full risk of ordinary shareholders.

**Ordinary or Common Stock**—In the majority of companies their whole capital is in this form. While the investment is neither secured like mortgage bonds nor carries a preference over other shareholders as preferred stock does, it does not follow by any means that it is a doubtful investment. The ordinary stock of one company may be much more valuable than the first mortgage bonds of another concern. Hence judgment is required as to the assets, the management and the field for service, of the business being invested in before one can fairly size up the merits of the investment.

**Fully-paid and Partly-paid Stock**—A company may not require the full amount of its subscribed capital and therefore calls up a portion of it only. The liability of the stockholder still remains and attaches to a subsequent purchaser. Due regard should be paid to this feature, as a call might be made at an inconvenient time, or if the investment depreciates the investor would not relish having to add to his undesirable holding.

**Bank Stocks**—Shareholders are under a double liability for their holdings, but the chances of its

## Use Foresight

"The Time to Prepare for a Rainy Day is when the Weather is Fine."

THAT is a truism. Yet many a person who would never for a moment dispute so obvious a piece of common-sense forgets that the time to prepare for a financial "rainy day" is NOW, and that the way to do so is by means of Life Insurance. To the great majority Insurance offers the only way within their reach of taking care of the future—not only the future of dependent ones, but their own as well.

The Great-West Life Policies provide such Insurance on exceedingly attractive terms. Premium rates are low and profit returns to Policyholders are high. Personal rates and full explanations will be gladly given on request. State age.

### The Great-West Life Assurance Company

Dept "U"

Head Office, WINNIPEG

## UNION BANK

OF CANADA

### A JOINT ACCOUNT is a Great Convenience

For Family Funds. It may be Opened with the

#### UNION BANK OF CANADA

in the names of two persons, either of whom can make deposits or withdraw money when in town or when passing the bank. It is especially convenient if the husband is frequently away on trips, as it enables the wife to procure funds for expenses on her own signature alone.



Head Office: Winnipeg  
Total Assets over \$109,000,000  
Deposits over \$85,000,000

#### BRANCHES IN BRITISH COLUMBIA

Hazleton, Prince Rupert, Smithers, Vancouver, Victoria



THE HOME OF SUCCESS

### GIRLS and BOYS WANTED

Results prove The Success College supremely superior. Twenty-five calls a day for Success graduates is common. This year we could have placed 426 more Stenographers and Bookkeepers. Our annual enrollment of 2100 students (in one school) is Canada's largest—it greatly exceeds that of all competitors combined. We employ 28 expert, certificated teachers. If you wish to succeed attend Success College. Enroll any time. Send for catalogue of courses.

**The SUCCESS**  
BUSINESS COLLEGE, LIMITED  
WINNIPEG, Man.

## WANTED

**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 15 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 Bldg., Winnipeg

### MONEY TO LOAN

in moderate amounts on improved farm property occupied by the owner.  
PROMPT ATTENTION CURRENT RATES  
Full particulars from our agent in your district, or

## UNION TRUST

STRENGTH—FIDELITY  
COMPANY LIMITED WINNIPEG, MAN.

243

## 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

being invoked in the case of our well-established banks is remote. The object, of course, is to protect the depositors.

**Life Insurance Shares**—Stock in new life companies should be left alone. It takes years to build up a paying business and sound business principles are sometimes overlooked in the feverish haste to write up a large amount of insurance. The Great West Life Assurance Company as a dividend producer of the first rank is a notable exception, but other companies organized several years ago are not yet paying a regular dividend to their shareholders.

**Foreign Stocks**—The small investor should leave these severely alone. They are usually subject to the income-tax and succession duty levies of the foreign country and, in any event, the distant shareholder has no control of the management.

**Mining Stocks**—The number of business men who hold worthless mining stock is almost incredible. The chances of getting any return at all from a new mining company are almost nil.

**Monthly Jottings**

The pre-election repentance of Sir Thomas White on the income-tax question is in line with public sentiment, but there must be no reduction in the war profits tax on corporations. The writer would endorse an income-tax down to \$100 per month, with a compensating reduction in the tariff on the necessities of life. The more direct a tax is the more will the government's administration be scrutinised, but from the partisan's standpoint that would be far from welcome.

The proceedings at the recent convention in Winnipeg of Canadian Life Underwriters showed a real desire to eliminate the waste in placing poor business on the books. Real service consists in satisfying the insured that he has the policy best suited to his cir-

cumstances and that at low cost.

The writer's opinion has been asked as to a 20 payment life with profits policy premium \$38.75, taken out recently by a party aged 36. The company is not of the front rank, and as shareholders are not receiving a dividend your profits are likely to be small. Why not apply to a really first-class company for a \$2,000 policy, whole of life plan, with profits deducted from annual premium and in a few years the net premium for the \$2,000 will amount to about \$40.00 only.

**POWDER YOUR HENS BY MACHINERY**

A hen may be healthy, well fed, and well housed, but if she is overrun with lice, and mites she cannot remain a profitable producer or a good mother for the young chicks.

Under ordinary conditions, lice and mites can be kept down by frequently spraying the poultry houses, roosts, dropping boards and nests and by providing a good dusting bath for the birds. When these precautions fail, individual treatment must be followed by dusting the birds with some good insect powder. In large flocks this is very laborious, and the following use of an old discarded churn may help to solve the problem.

Put a cupful or so of insect powder in the churn. Next put in the birds one at a time and turn the churn gently for a half dozen revolutions. If the powder contains carbolic acid or some other strong irritant, it will be well to protect the birds eyes by slipping a small cloth sack over their heads.

The rotation of the churn causes the bird to relax and the feathers to open, thus letting the insect powder get well into the skin.—C. S. Anderson, Colorado Agricultural College, Fort Collins, Colorado.



SIDE LIGHTS IN SUBSTITUTED SERVICE  
(The Village Store)

Aged man (to customer wanting a ham sandwich): "I'm sorry to keep you, Sir, but it's awkward, my son being called up and me new to it all, 'am! 'am! Now where did I see the 'am?'"

# Old Friends! New Friends! Everybody!!!

It seems almost impossible, but it is true that you can win a handsome, comfortable, speedy 5-passenger 1918 Model Ford Motor Car at a cost of no more than the subscription price of this magazine.

All you have to do is to estimate the correct or nearest correct number of kernels in the bottle reproduced on this page between this date and 1st May, 1918.

**ESTIMATE NOW!**

Don't take any chance of being disappointed. Every man or woman, young or old, is eligible to estimate if they live on a farm in Manitoba, Saskatchewan or Alberta. Of course the car will be presented to the person who estimates correctly first. Send your renewal subscription to this office to-day in accordance with the schedule below. Contestants are reminded that renewals and remittance must be sent into our office direct, otherwise they cannot enter the contest.

**PREVIOUS WINNERS**

**1916 CONTEST**  
F. B. Snyder, Elkhorst, Manitoba, won the car with an estimate of 47,038 kernels—the actual number of kernels in three and one-quarter pounds of No. 1 Northern Wheat being 47,037.

**1916-1917 CONTEST**  
H. Avery, Clearwater, Manitoba, won a car with an estimate of 76,406 kernels; Ed Sedgwick, Tezerton, Sask., won with 76,402; R. Orr, New Norway, Alta., won with 76,400 kernels. Five pounds and seven ounces of No. 1 Northern Wheat were used on this occasion.

The Bottle Contains  
**TWO  
POUNDS  
AND  
THIRTEEN  
OUNCES**  
of  
**No. 1  
Northern  
Wheat**



The wheat is this year's crop, Marquis, grown in Manitoba, weighing 64 pounds to the bushel.

The wheat was obtained from the Dominion Grain Inspector at Winnipeg.

The bottle of wheat now lies in the vault of the Union Trust Company, Winnipeg, where it will remain until the contest closes.

## HOW TO WIN THE CAR

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 the car. Estimate now and increase your chance of winning, because it is the first person who estimates nearest to the number of whole kernels that wins the 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 the 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.

**CONTEST  
CLOSES**

1st MAY, 1918



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

# OUR WOMEN FOLK

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## THE PSALM OF A COUNTRY WOMAN

By Helen Christine Bennett

I am a country woman,  
When the sun shines, my pulses beat with gladness.

At night, when I have ceased my labors, I look upon the stars. When I see the myriads shining above me—each, perchance, a world as my own—I know that life is not futile nor fruitless.

I can not count the stars, there are so many. How then can I hope to grasp infinity?

The sting of Death has touched me, but although it has robbed me of a Presence, yet may I rejoice.

For every Spring I see again the miracle of resurrection. I have planted the tiny seed and have guarded its growth until I have the tiny seed within my hands again. So I comprehend dimly a cycle that has neither beginning nor end.

By day I work with my hands and under them I see transformed the sustenance of life.

It is good to see butter come gold in the churn.

There are those who come from the places where many dwell, from the cities where those things are not. Such say to me,

"Is not life here monotonous?" I smile within my secret self to hear them.

For they know not of the drama that is held in producing the means of life, the never-ceasing battle waged with Nature, nor of the joy of victory.

The wild carrot grows by my doorstep. I have seen it countless times, yet ever is it a thing of exceeding beauty.

And it is but one of uncounted beauties about me.

The air is sweet.

The arms of my mate are strong.

My children, brown under the sun-kiss, discover each day new wonders in the fields and woods.

I have pity for the blindness of those who thus speak to me.

For I have known the fulness of life and my eyes can see.

## Home Economics

We are pleased with the excellent reports and papers from the H.E.S. and Homemakers' Clubs. We are printing some of the papers late as we have been crowded for space, but they are so instructive and interesting that we know they will be appreciated just as much this month. I trust the Oak Lake H.E.S. will pardon the delay in the printing of their splendid reports.

P. R. H.

### Shouldering Responsibility

Read before Miami H.E.S. by Mrs. Z. M. Collins

Have you ever watched the old age of people who have just drifted through life? Did you ever notice how negligible and how useless they seem? No one turns to them for advice or for the wisdom which is the blossom of experience. No one leans upon them for support in the hour of need. They have somehow escaped all difficulties, all the tests and trials of life; and so, at the last, they escape all prizes that strength and effort have garnered. Believe me, there are no palms and crowns without the dust and heat of battle.

All our earthly life is a series of individual choices, of battle fought, of work valiantly undertaken, of risks accepted, of strength and effort put forth. What is life but a great field for both private and public choices. You must choose first what you will do with your own time and your own strength. You must choose how you will live in your own family and among your friends and acquaintances—what example you will set; what opinions you uphold. Then there is to-day open to each last one of us however unimportant we may think ourselves, the field of public choices. A nation may think it wise not to get into trouble by showing partisanship in a

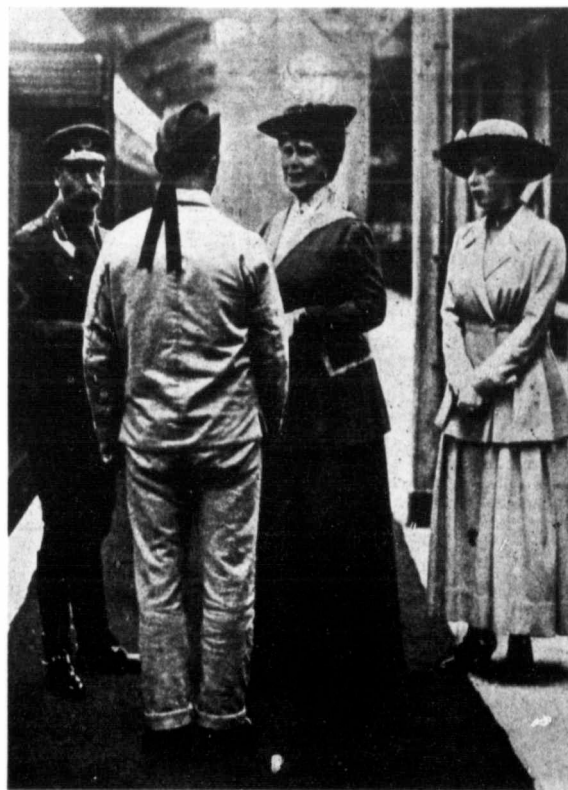
vestments, of honest business methods, of how to deal with defectives, criminals, enemies to society, of the justice of woman suffrage. The course of the world depends upon what opinion you utter upon these subjects. In such matters of morality it is not fair to be neutral. You may have to suspend judgment, indeed, until you can inform yourselves adequately. You ought to find out all you can upon these subjects, but, once informed, you must choose your side and accept the responsibility of helping on the thing you believe to be right. For daring and partisanship are necessary to effectiveness of character. If you intend to be anything you must begin by look-

er responsibility of a definite course of reading in your leisure? Remember we are here on earth building a character creating a life. In order to do it we must study, reflect, add to our natural ability, stock our minds and set an example. Have you planned out a course of study and chosen a subject upon which you want to be really informed. You may read only before you go to sleep, but some of your leisure, no matter how hard worked you are, must be given over to self-improvement, or you will not improve. You have to shoulder the responsibility of building up your own character and of serving others, wisely and unselfishly. Then there comes later to almost every woman the responsibility of her own home, her house, her husband, her children. What kind of a house are you going to keep? What are you going to set first, cleanliness, order, books and a musical instrument, perhaps; or a mass of silly little bric-a-brac and fussy decorations? Are you going to spend your income on things of lasting value or on knock-knacks? No matter what your neighbor has, shoulder the responsibility of having a home decorated with labor-saving simplicity and healthful cleanliness. Remember that your backyard and your front steps are a part of the commonwealth in which you live, and make them an example to the whole neighborhood. They are a part of the beauty and health of your town. Every woman who bears a child accepts a wonderful responsibility. It is her task to present the world with a civilized human being and the task must begin with the child's first day on earth. Nay, I believe it begins in the mother's control of thought before ever the child comes upon earth. Have you ever stopped to think of the responsibility you owe to the man who married you? I have read somewhere that no two people can stand close together unless the ideal stands between them. That means that no marriage, no close friendship, can exist unless the two parties of it are shouldering the responsibility of furthering some ideal of a lovely home, or of social service, or of self-restraint and self-discipline and exemplary conduct. Do you accept the responsibility of the ideal? Remember, woman, as the individual, is the unit in the home, the family is the unit of the nation and the tone of the family is your responsibility. You must shoulder that. It must be your task to dictate the tone of the family, the ideals of its living, the restraint of its wants, the energy of its service to the community. No matter what your neighbors do, you must master the conditions of living, lest they master you. Do and dare. Every responsibility you shoulder strengthens your back. Believe in life and ideals, and they will reward you. Never shrink the issue. So when old age comes be able to whisper to yourself: "I, too, have fought the good fight; I have kept the faith."

### Flowers and Their Influence in the Home

By Mrs. Wm. Steedman, Deloraine. Read before Deloraine H.E.S.

Our homes are so much more than the houses we live in. Rooms, furniture, pictures and household things are necessary. But these do not make a home. Sometimes we are given to thinking only in terms of buildings when we speak of our home. We so often hear the remark: "what a beautiful home our neighbor has," when we should say:



OUR BIG-HEARTED KING AND QUEEN

The photo, of which this picture is a reproduction, was taken at Netley Hospital, England, on the occasion of a recent visit paid to the hospital by the King, Queen and Princess Mary. They found amongst the patients an old servant, both of the King and of his late father, King Edward, in the person of Corporal McLean, of the famous "London Scottish." The picture shows the meeting between King and Corporal—a source of mutual pleasure, while it will also serve to corroborate what I said in last issue as to the common sense ideas of Her Majesty and the young Princess in the matter of their personal attire. P. R. H.

great public upheaval, but an individual must make moral choices. In this great world upheaval of destruction you cannot afford to drift without making up your mind whether national greed and desire of greatness and importance justifies wholesale slaughter. You must morally take sides and know wherein lies your individual faith. There are great questions all about us of child labor, of the sweat shop work, of temperance, of minimum laws, of clean in-

g about you thinking things over, taking sides, shouldering responsibility and upholding your own cause. Then there is the great question of work and leisure. One must choose whether one is going to skimp one's work or put into it all enthusiasm and interest and superabundance that makes work worth while. As to leisure, is it all to be given over to diversion, the running to moving picture shows, to hunting out excitement and pleasure, or are you going to should-



"what beautiful buildings he has." It seems our ever-increasing duties leave little time for the study of trees, flowers and shrubs, the distant views, lakes and streams with which we are blest. All of these, however, should be a part of what we call home. All should play a part in the development of our everyday life. Usefulness and beauty go hand in hand; the two are inseparable. Neither interferes with the other. And our homes to develop the best family life must be beautiful as well as useful. Love is the keynote of every true home, the golden thread that runs through and through a happy home. And as has been said:

Flowers are love's truest language; they betray  
Like the diving rod's of magic old  
Where precious wealth lies buried, not of gold  
But love, strong love, that never can decay  
Where fall the tears of love the rose appears.  
And where the ground is bright with friendship tears,  
Forget-me-not and violets heavenly blue  
Spring glittering with the cheerful drops like dew.

We are all very much the creatures of our environment. Flowers in any form, in any place, seldom fail to suggest pure thoughts. The child growing up with beautiful things, especially Nature's beautiful and pure things, has a good chance to have its mind stored with good pure and beautiful thoughts. And anyone so blest, has their thoughtfulness for the happiness of those with whom they associate very much increased. Our children grow and ripen in an atmosphere of love and cheerfulness, and it is, therefore our duty to create such an atmosphere. A child reared amid such love and brightness cannot fail to tend toward refinement of character. No matter how much money may be spent on an elaborate house it never looks its best without tastefully grouped flowers. And many an ordinary shack has been made into a really beautiful home by the tasty arrangement of a few flowers. Flowers seem to have such a quieting or restful influence on a person. We may not notice it at all times; but come home tired and worn with your day's work. Or a child from the school or even play, how restful it seems to come into a home where the very atmosphere breathes a restful quietness in the language of flowers. Such a difference coming into a fine house with beautiful furniture, and no plants or flowers. There seems to be something lacking. There is a harshness in the air rather than rest. Our homes should, together with our buildings and other possessions say: "not I am rich, but this is my home; not keep off the grass, but welcome my friend." Flowers are words that even a babe may understand. Almost as soon as a child can notice anything they are attracted by a pretty flower. For this love of flowers is born in every child; this love may be crushed out or may be developed. If crushed some home will suffer; if developed some home, indeed, many homes, will profit. Bacon says: God Almighty first planted a garden and, indeed, it is the purest of human pleasure; it is the greatest refreshment to the spirit of man. We find in the old Eastern lands they talk in flowers and they tell in a garland their loves and cares; so we, in this land use flowers as one of the best ways of conveying our sympathy. What is more appreciated by those who are ill or convalescing than a bouquet of flowers sent by a friend. It seems to breathe the very message of love and sympathy that we ourselves could not express. For they speak of hope to the fainting heart. With a voice of promise they come and part. Mr. J. D. Wright once said flowers have had a great and lasting uplifting influence on my life and whatever of good there has been in my home as a result of my being in it, has been largely contributed to and colored by my own personal love of flowers. Flowers and plants are so interesting for those who are taking care of them. There is always something to look for. It seems that each opening leaf or bud has something suggestive in it. We of to-day are building homes for the future. Let us plan them well so that our children

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will be surrounded by all that is brightest and best that we can give them. Let our homes be so bright and cheerful that in looking back over their life the word home will mean more to them than just a bare house set on a hilltop. Let it be a picture colored with all the brightness that trees, shrubs and flowers can give it. This love of flowers widens our minds. And it seems much more easy to follow God's Word as to loving all things. In all places, then, and in all seasons, Flowers expand their light and soul-like wings. Teaching us by most persuasive reasons. How akin they are to human things.



*Inquisitorial Visitor*—"And how many Germans did you kill?"  
*Bored Tommy*—"I don't know how many; but once my mate shouted, 'Shake yer bloomin' bayonet, Bill; there's six on it!'"

And with childlike, credulous affection. We behold their tender bud's expand; Emblems of our own great restoration. Emblems of the bright and better land.

### NERVES AND THEIR TREATMENT

By Dr. TURNER

(Read before the Deloraine H. E. S.)  
Nerves and their treatment, which may be defined as Neurasthenia, a Greek derivative meaning nerve debility, nervous prostration, depression due to the exhaustion of nerve energy and increased sensitiveness to external impressions. It is the name for a group of symptoms result-

ing from some functional disorder of the nervous system with severe depression of the vital forces. It is usually due to prolonged and excessive energy, and is marked by fatigue, lack of energy, pain in the back, loss of memory, insomnia, constipation, loss of appetite, etc.

Assuming that the definition as stated meets with the approval of your members, we will treat the subject from the standpoint of Neurasthenia. If you note a repetition of words or phrases, note them because they are of importance.

Neurasthenia is a condition of ill-health in which the most prominent symptom is a constant nervous exhaustion. Although no actual lesion can be found by the pathologist the nerve centres are characteristically weak, irritable and unable to stand any great strain. We do not all start in life with the same amount of nerve capital. Parents who have led irrational lives, indulging in excesses of various kinds, or who have been the subjects of nervous complaints or mental trouble, have a tendency to transmit to their offspring an organization which is defective, in what for a better term, we must call nerve force. So long as these people are content to transact a moderate business with their life capital all will go well, but there is no reserve and in the exigencies of modern life these small capitalists go under and come to us as bankrupts.

It is a great mistake to suppose that all the varied symptoms of which they complain are more or less imaginary or mere hysteria. They are suffering from a real disease which requires to be treated with the utmost skill and care.

Most cases of Neurasthenia occur between the age of twenty and forty or fifty, when the strain of life is at its maximum. It is undoubtedly on the increase in this country. Three of the main causes, all of which are worthy of special mention, since the first is largely avoidable, and the second two, entirely so. These causes are:

1. Influenza, which attacks so many tens of thousands every year, leaving the nervous system run down and unstable for months afterwards.
2. The decay of the teeth, which is so general now-a-days among all but a very small minority of the people in this country. Decaying teeth cause the Neurasthenia, first, by setting up a diseased condition of the mouth itself, and secondly, by the resulting gastro-intestinal upset, caused by the constant swallowing and absorption of the poisonous material formed in the mouth.
3. The unnecessary hustle and bustle, particularly in our great cities, where nearly every person you meet seems to be trying to get two days' work into one.

**Causes**

The causes may be divided into predisposing and exciting. Of the former, heredity is the most important, weak nerves being often bequeathed to their children by nervous parents. Any disease which exhausts the vitality of the parents may be answerable for the Neurasthenia in the children, for example, gout, syphilis, alcoholism and tuberculosis. Other predisposing causes are improper training in infancy and occupations which impose great physical or mental strain. A pampered, petted child is more apt to suffer unduly in after years from slight hardships and worries than one accustomed to discipline.

Again, a person whose business, profession or occupation involves constant strain, excitement, anxiety or too long mental concentration is especially liable to loss of nervous vitality, which constitutes Neurasthenia.

General malnutrition, whether the result of too little or unsuitable food, or a part of some wasting disease, such as consumption, may be included in the contributory causes because in a generally run down state the patient is more than normally open to the development of nervous ailments of all sorts.

The exciting causes are numerous. Among these one of the most common is overwork, not so much prolonged work done quietly, as work carried out at high pressure: the hustle of modern life, which saves at the cost of nervous breakdown. Brain work is obviously a more potent factor than muscular work. The barrister who has to master important cases in a limited time; the writer who has to turn out his work at top speed, and even the clergyman, who through stress of other work, constantly puts off the composition of his weekly sermon to the last minute, are frequent victims of Neurasthenia. But even those doing physical labor often suffer when hard work and long hours are combined with a struggle to live, and trouble in the home. Men suffer more than women, but the latter are more liable to nervous exhaustion from domestic worry, disappointment over love affairs, prolonged nursing of sick children, followed perhaps by grief at their death. Another but rarer cause is injury and shock.

Sexual excesses and masturbation give rise to well developed cases of Neurasthenia. The ailment also sometimes develops in connection with diseases of the heart, liver, ovaries, womb and other organs.

Business worries, domestic worries, the constant dwelling on the possibility of a coming crisis, are common causes of Neurasthenia. When, through constant worry, the power to sleep at night is temporarily lost, we have one of the most active causes at work undermining the stability of the nerves and therefore leading up directly to the disease.

Apart from the injury, constant racking pain, as in sciatica or severe neuralgia, by wearing out the nervous system, tends to the development of Neurasthenia.

A common cause, which is more likely to be overlooked than any other, is decaying teeth and inflammation of the gums. The constant swallowing of the purulent material formed in the mouth tends to keep the body in a chronically poisoned state, which is in itself enough to bring on Neurasthenia. Chronic dyspepsia, which



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perhaps has existed for years, and chronic constipation are two other causative factors. The nerves always share in any condition of ill nutrition of the body and it cannot possibly be well nourished when the food is not digested and the bowels are not working properly.

The minor women's ailments do not seriously endanger health, but they cause so much discomfort and worry, as very often to make life a burden. It is these that are apt to be neglected, and yet they no less call for skillful medical treatment. Not only does some, at first slight, affection of the womb produce chronic discomfort, but if allowed to develop it may be the cause of sterility.

One reason why these ailments are so troublesome is that a woman's nervous system is more sensitive than that of a man. Added to this is the fact that a woman often lives very much alone, and

has no occupation to take her thoughts off herself. She is consequently rather given to dwelling on every little symptom and exaggerating it. Any local pain or discomfort becomes worse when the attention is constantly centred on it, and in the course of time the woman's health becomes more or less impaired.

In many cases slight pains or other abnormal symptoms give rise to fears of some impending disease. Cancer and other tumors are particularly likely to be thought of, and once an idea gets into a woman's mind, she does not easily get rid of it. Probably she will try to relieve her fears by talking to a friend. Then she will be told of all the cases of cancer that have come to her friend's knowledge. She will compare her symptoms with their's, and in the end what was only a fear and a suspicion, will become a conviction. For such a case a visit to a doctor

in whom the patient has confidence is the only wise course. Five minutes conversation with him will probably show her that her fears have no foundation, and that her symptoms are due to some very slight and harmless causes.

The symptoms of Neurasthenia are: Abnormal exhaustion after any effort, physical or mental. Even the slight effort of dressing may leave the patient quite fatigued. He is usually very irritable, low spirited and fearful, even though there is nothing to be afraid of. He worries over trifles, cannot sleep soundly, suffers from headache, and loss of memory. He loses appetite, his digestion is slow and weak, he may have frequent fits of palpitation suffers from introspection, from wind and fullness after meals, and is usually more or less constipated.

Trembling of the limbs or body may be present, especially when the Neurasthenia

themia results from injury. There may be a feeling of giddiness, pain in the small of the back, great sensitiveness of the skin, with prickling or burning sensation and cold extremities. Again, he may suffer from noises in the ears, sometimes from blurred vision, flushing and sweating. He is easily angered, often painfully self-conscious, and often complains of sexual weakness.

In family life this strain reveals itself in the now rather remarkable manner in which people "take offence" so easily. They think they are offended, but they are really only overstrained. In that state a mild reproach becomes a bitter insult, and is resented as such. "Trouble binds us together" say the sages. Perhaps. But, also, in binding us together, it makes us all fight with one another. We love one another very much, but we don't let one another see it.

**Prognosis**

Because Neurasthenia starts so insiduously and gradually, and usually becomes chronic before a diagnosis is made or treatment commenced a cure is nearly always a tedious process. However, if the Neurasthenic will pull herself together and co-operate with her physician a cure may be looked for in practically all cases that have not degenerated into chronic hypochondriasis.

Where the ailment is directly dependent on some specific cause, such as overwork, unnecessary worry, alcoholism, dyspepsia, decayed teeth, chronic constipation, sexual excesses, etc., the removal of the cause will usually be promptly followed by a marked recession of the symptoms. In addition to the removability or otherwise of the chief cause, the age of the patient and the duration of the disease are all important in gauging the prospects of recovery. When the cause has been acting only a short time and the patient in the twenties, and the cause may be either removed or appreciably lessened in its activity, a complete cure may nearly always be expected in three or four months. In older people where the cause of the disease has been undermining the patient's health, a cure takes longer.

Sometimes the Neurasthenic falls into the habit of taking drugs, such as the bromides, chloral, remorol even morphia. Until this is abandoned no hope of cure can be expected.

**Treatment**

When the parents are weak-nerved the children are extremely likely to suffer from Neurasthenia as soon as the stress of life begins. In such cases it is necessary to rear the children with great care. In infancy they should be protected from all excitement. Too much talking to the young child should be avoided; he should have abundance of sleep out of doors or in a quiet, well ventilated room, and should be guarded from constant irritation of the nervous system by loud noises.

All through childhood plenty of fresh air is necessary. Games should not be too wild and exciting, and never practised to the point of fatigue. The effect of work at school and study at home should be carefully watched. Indeed, it is better to allow no study at home, and if the child shows symptoms of brain fatigue he should be kept at home for a time. Constant reprimands, constant directions what to do and what not to do are ruinous to such a child's nerves. He should be treated with quiet firmness, but very gently, and it is as well to overlook little acts of misbehaviour as much as possible. These children are liable to paroxysms of temper that they really cannot help, and the best thing is to put them to bed and rest their nerves.

The choice of the future occupation of the child is of the greatest importance. Many a man breaks down under the strain of business competition or professional life, who would be perfectly healthy as a farmer.

For the adult the preventive treatment consists of avoiding all undue stress on the nervous system from overwork, unnecessary worries, abnormal excitement (particularly sexual excess), and a too sedentary, high pressure manner of life.

Hard work in itself will not cause Neurasthenia as long as it does not cause a too great and too prolonged mental or physical strain.

The individual threatened with Neurasthenia should go carefully over his way of living to see if he cannot render it less strenuous, less exciting and less fatiguing.

He should try to get in more outdoor exercise, but here he must be careful not to overdo it. He should see that he gets at least eight hours in bed every night, should give up strong stimulants of every kind, and should keep to a moderate, readily digested diet. There are no special foods to be recommended as long as he eats only what can be easily digested.

**Cuative Treatment**

The cure of Neurasthenia is always slow; the patient should realize, however, that it is nearly always obtainable.

Of course the treatment must vary according to circumstances. An ill person must find something to do; an overworked patient must have rest. If a man or woman breaks down through overwork they should take a long holiday if they can afford it. A rest of a month or two is seldom of value. City people should go to the country; country people to town or city.

Important points to remember; that any exercise to be of benefit must be pleasurable, that it should not be fatiguing, and that it must be taken with pleasant companionship.

The Neurasthenic should never be much alone, except when resting. Very often there is much muscular restlessness coincident with great nervous exhaustion, and while a certain amount of exercise is necessary, rest is also imperative. It is well, therefore, to lie down for an hour or two several times a day in a quiet darkened room, or better still, out of doors. This resting time is especially necessary after exercise and before meals.

Above all, the patient's thoughts must never be allowed to centre on his condition.

When a woman suffers from Neurasthenia she should go away from home, if possible. If this is not practicable, she must take the duties of the home very lightly. She should, if possible, be spared the worries of looking after her children. She must rest as much as possible. She should go out for a couple of hours each day, and where possible, take a short walk before going to bed.

**Diet**

In all cases the diet must be nutritious and digestible. Each patient has to regulate this matter for himself or herself.

While as a rule the Neurasthenic (like most other individuals) eats more than he actually needs, and would be better for a reduction in the amount, patients who are thin, ill-covered and constantly tired, both mentally and physically often would be better for a somewhat more generous diet. This is, of course, providing that they do not bolt their food, but on the contrary, chew every mouthful before swallowing. Tea, coffee and alcohol should not be taken at all.

The bowels must be kept regular. Drugs are of little value in the actual cure of Neurasthenia, but there are certain conditions in which they are necessary.

Veronal, sulphonal and the host of similar sleep-producing drugs which are now-a-days so frequently self-prescribed by patients, are all more or less dangerous, and should never be used except by the doctor's orders.

Other remedies for sleeplessness are a short walk before going to bed, a hot bath at bedtime, or a glass of hot milk.

Osler says that the use of religious ideas and practices may be most helpful, and this has come into vogue in various forms, as Christian Science, Emmanulism, Mental Healing, etc. It is an old story. In all the ages and in all lands the prayer of faith, to use the words of St. James, has healed the sick; and we must remember that amid the Aesculapian cult, the most elaborate and beautiful system of faith healing the world has seen, scientific medicine took its rise. As a profession consciously or unconsciously, more often the latter, faith has been one of our most valuable assets and Galen expressed a great truth when he said: "He cures most successfully in whom the people have the greatest confidence." It is in these cases of Neurasthenia and Psychasthenia, the weak brothers and the weak sisters, that the personal character of the physician comes into play, and once let him gain the confidence of the patient, he can work just the same sort of miracles as Our Lady of Lourdes, or Ste. Anne de Beaupre. Three elements are necessary: First, a strong personality, in whom the individual has faith—Christ, Buddha, Aes-



JUST at the present time the presses of one of Western Canada's finest printing plants are busily engaged in producing what we feel confident will be the finest jewellery catalogue ever published in Canada. Despite war conditions, seldom, if ever, have we or any other jewellery concern gathered together a more comprehensive or attractive assortment of Jewellery, Cut Glass, Silverware, Watches, Clocks, Stationery, Leather Goods—all the splendid values you have doubtless learned to expect from a Dingwall catalogue.

This catalogue is sent free of charge anywhere in the world to anyone who is sufficiently interested to ask for it, or who has purchased recently enough that we are sure of the address.

To "blaze the trail" for the big catalogue, a little folder will be sent out within the next few weeks. There are quite a number of new things—too late for the big catalogue—you will want to make sure of seeing these.

Send us a card now, so that the booklet may go as soon as completed, and we shall reserve your catalogue as well.

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"SUPER-BACON"  
Better than just "plain" bacon  
.....in quality, flavor and economy. Selected, smoked and cured with always one aim in view.....HIGHEST QUALITY.  
ALL GOOD DEALERS SELL "SWEET CLOVER" PRODUCTS  
Gordon Ironside & Fares Co. Limited  
Winnipeg - Moose Jaw

TURN TO OUR **Startling Contest**

ON PAGE 42C

There's a New Ford Car in it for YOU

eulapius (in the days of Greece), one of the saints, or what has served the turn of common humanity very well, a physician. Secondly, certain accessories—a shrine, a sanctuary, the services of a temple, or for us, a hospital or its equivalent, with a trained nurse. Thirdly, suggestion, either of the "only believe," "feel it," attitude of mind, which is the essence of every cult and creed, or of the active belief in the assurance of the physician that the precious boon of health is within reach of all.

**H. E. Reports**

**Oak Lake**

The regular monthly meeting was held on the third Saturday of the month.

A spirited discussion was brought up re the various ways of doing our bit for the boys at the front. Finally it was decided to send a comfort bale, and each member to address their own package to the one they loved best. Bale to be packed on August 4th.

The secretary was instructed to write the Virden society and ascertain whether they would be willing to exchange their library with ours.

It was announced that Mrs. McBeath would be here on August 10th to give a demonstration in the canning of fruits and vegetables.

The Business Committee were instructed to purchase a new oil stove, as the one in use was considered unfit.

After the business was dispensed with Mrs. Stevens read a most instructive paper on "The duties of parents to their children."

Miss Anderson delighted everyone with her sweet song, "A Little Pink Rose."

After the singing of the National Anthem the tea was served by Mesdames Higginbottom and Fawkes.

The regular monthly meeting of March was held on St. Patrick's Day and was made unique by appropriate emblems designed by a local artist. The programme was opened with a solo by Mrs. Cameron, "When I Dream of Old Erin I'm Dreaming of You." Mrs. Burns presided over a question drawer which proved most interesting. The first question on the Boy Scouts was replied to by Mrs. Borthwick. The supervision of playgrounds by Mrs. Cochrane. "The H.E.S. as the Leading Society Among Women," Mrs. E. K. Smith. "Shield Every Woman Contribute to the Programme," Mrs. A. S. Thompson. "How Can we as a Society Deal with the Cost of High Living," Mrs. Kearns. A solo by Miss Parsons with violin obligato then brought a most instructive afternoon to a close. Tea was served by Mesdames Lang and McCubbin.

The regular monthly meeting of April was held on Saturday, 21st.

Mayor Thompson gave a splendid address on "Women and the Ballot," telling us exactly how to mark the ballot when voting day came round.

The Rev. Mr. Hatter then spoke on "Women's Preparedness in the Homecoming of our Soldiers," which greatly impressed everyone present.

A solo by Mrs. Wallace brought the programme to a close. The hostesses, Mesdames Burns and Kearns, for the afternoon, then served tea.

The regular monthly meeting was held on May 20th. Resolutions passed: That the secretary write to Winnipeg for a lady to speak at the grain growers' picnic, date June 15th; that \$25 of banquet receipts be paid into the Serbian Relief Fund; also that a bale of clothing be packed for the Serbians at the next monthly meeting; that the membership fee be increased to \$1.00 per year.

Programme: Reading, "Preparing to Receive Company," by Mrs. Somerset; solo, "The Magic Month of May," by Miss Goodwin.

The regular monthly meeting was held on Saturday, June 16th. The members were much interested to hear that Mrs. McBeath, of the A.C., was shortly to give a demonstration on canning of fruits and vegetables. The Rev. C. E. Somerset gave a most instructive paper on

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1506

No matter where you live, you can obtain the latest styles and the highest quality in Fur sets or garments from Hallam's by mail. All Hallam garments are high quality Furs—yet can be obtained by you direct by mail at lower prices than elsewhere for the same quality—every Hallam garment is guaranteed.

**Why We Can Sell at Such Low Prices**

Because, in the first place, we buy our skins direct from the Trapper, and sell direct to you for cash, saving you a great share of the middlemen's profits—high store rent—bad accounts—salesman's salaries. Then you are sure of satisfaction when you buy by mail from Hallam. You see the articles in your own home and can examine them without interference—If the goods do not please YOU in any way—you can simply send them back AT OUR EXPENSE, and we will cheerfully return your money—you are not out one cent—we are thus compelled to give extra good value as we cannot afford to have goods returned. The articles illustrated in this advertisement are fair samples of Hallam's great values and will be sent promptly on receipt of price.

**1506. Driving Coat of Fine Muskrat.** 45 inch length, beautifully designed. Skins are of fine quality; even, dark colors, carefully matched, and workmanship is faultless. Lined with heavy guaranteed brown satin—new a yale collar, which can be worn as a high Chin-chin or flat as in small illustration. Finished at waist line with half belt. In sizes 32 to 42, bust. \$75.00, delivered to you.

**1508. Muff to match in new melon shape (as illustrated), or in pillow style.** \$11.50, delivered to you.

**1507. Hat to match, silk lined.** \$19, delivered to you.

**1686. Handsome Manchurian Wolf Set.** Newest design, made from fine, jet black silky skins. The large stole is in two skin style, wide across the back and shoulders—trimmed with heads, tails and paws. Muff is large and comfortable, made over soft down bed—has wrist cord, and is trimmed with head and tail—lined with corded silk plush. Exceptional value. \$13.50 per set, delivered to you.

Don't forget to send for Hallam's Style Book to-day—it's FREE—Address as below, in full, please.

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**205 Hallam Building TORONTO**

**FREE**

A beautifully illustrated Fur Style Book—giving advance information on furs and fur fashions and containing 125 illustrations of up-to-date Furs and Fur Garments—All these illustrations are photographs of living people—thus showing how the Furs REALLY appear, it shows Furs for every member of the family. Don't fail to send for this book TO-DAY—it is now going to press and will be mailed as requests are received.

**HALLAM'S 1917-18 FUR STYLE BOOK**



"Child Life," which was followed by an address by Mr. Cameron on "Town Beautifying." Many practical hints were given in connection with this, and it is to be hoped that it may be possible some day to have these ideas carried out. Mrs. A. S. Thompson then sang "The Garden of my Heart" very sweetly. After the singing of the National Anthem tea was served by Mesdames Harrison and Little.

**Neepawa**

Dear Mrs. Hamilton—Am sending you a short report of our last meeting and enclosing some of the recipes given there. This month we are to have our picnic, then we have no more meetings till September. Our meeting was held in St. James Church school room, forty-five members being present. All members were to answer roll call with some helpful hint, new idea for work in the society, or recipe or pay a fine of five cents towards the prizes we are giving for Boys' and Girls' Club. We are giving two prizes for best loaf bread and neatest bit of sewing. Every one had been asked to bring a slip of house or garden plants for exchange, several did so. Mrs. Dr. Martin gave a splendid paper on "Our Flag and What It Means," beginning with the earliest flags used, which were made square instead of oblong and size of flag used depending on rank of the person using it. This was followed by an instrumental solo and song, "We'll Never Let the Old Flag Fall." After singing "God Save the King" and "God Save Our Splendid Men," this enjoyable meeting was brought to a close. Yours truly, Annie Simpson.

**Rice and Whipped Cream**

½ cup rice, 1 pint milk, 1 cup sugar, ½ teaspoon salt, 1 quart cream whipped, 1 tablespoon vanilla, ½ box gelatine. Method—Put rice on to boil in a quart of cold water. When it begins to boil, pour off all the water, add pint of milk, cook one hour in double boiler, add sugar, salt, vanilla, gelatine which has been dissolved in a little water for a few minutes, set in cold water, stir occasionally until cold, mix thoroughly with whipped cream, set away to get firm. Is nice made a day before using.

**Grandmother's Tea Cakes**

4 eggs, 2 cups sugar, 1 cup butter, 2

**FREE TUITIONS**

AT THE

**Manitoba Agricultural College**

Four free tuitions at the College offered to young men and young women—

For four best letters supposed to be written to some friend on either of the subjects:

The reasons for { a home economics } education getting { an agricultural } NOW

The competition is open to Prospective students only

The free tuitions, to the value of \$25.00 each, will be granted in the first year's course when the winners enter the college.

Two of the four prizes will be awarded to young men and two to young women.

Those wishing to compete may secure information about the College from students they know, or may receive a folder by writing to the College.

The letters should not be long, and should be written with a view to induce the friends addressed to take advantage of a course at the College now. When completed, the letters should be signed by the authors, and mailed to the President of the Agricultural College, Winnipeg.



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OF EXCEPTIONAL BARGAINS

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If you are a regular EATON customer you have already experienced that feeling of delight and anticipation, which comes twice yearly with the arrival of the EATON General Catalogue.

If you are not a regular EATON Customer, a post card with your name and address is all that stands between you and this world-wide harvest of economies.

### Organization is the Secret of Economy

To procure dependable merchandise at reasonable prices is becoming more difficult every day and requires the combined efforts of an intelligent organization; an organization to buy judiciously, which means reasonable selling prices; an organization to give that service which has made and is holding so many satisfied EATON customers.

### EVERY PAGE, FROM COVER TO COVER,

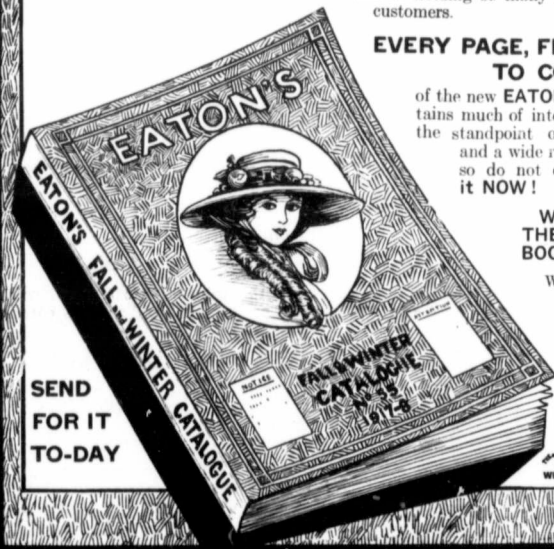
of the new EATON Catalogue contains much of interest to you from the standpoint of both economy and a wide range of selection, so do not delay. Send for it NOW!

### WE ALSO HAVE THE FOLLOWING BOOKLETS:

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T. EATON CO. WINNIPEG CANADA



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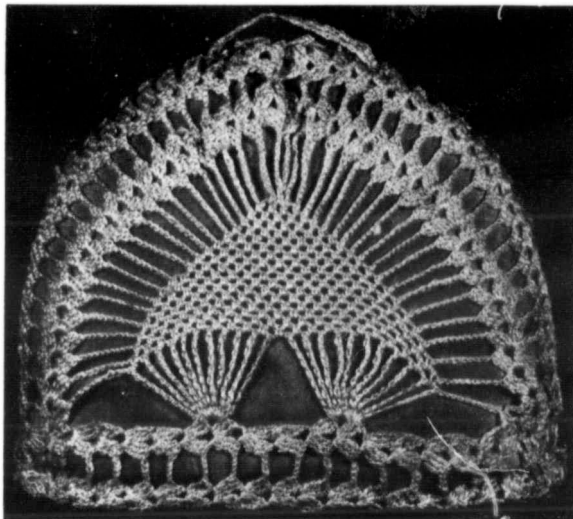
See the Women's Working Overalls Shown in EATON'S Catalogue



tablespoons sour milk, 1 teaspoon baking soda, flavor with lemon, work in enough flour to make soft dough, roll out fourth of an inch thick, cut with a biscuit cutter. Bake in moderate oven.

**Nut Pie**

1 cup walnut meat chopped fine, 1 cup raisins, 2 cups chopped apples, 1/2 cup sugar, mixed with teaspoon each of cinnamon and allspice, 1/2 teaspoon each cloves and salt, 1/2 cup vinegar, 1/2 cup water or fruit juice, mix thoroughly. Enough for 2 large pies.



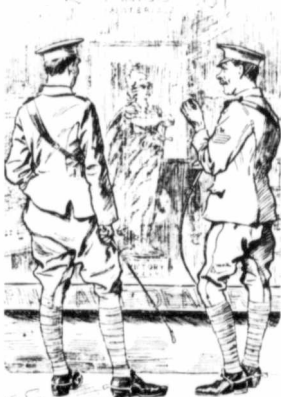
**PRAIRIE ROSE HOMEMAKERS' CLUB**

Mrs. Robert Caskey entertained the Prairie Rose Homemakers' Club at her home on July 3, the June meeting having been postponed on account of the convention. Goods were distributed amongst the members, to be made up for the bazaar, which we expect to hold soon.

The main feature of the meeting was a most interesting and beautifully-worded report read by Mrs. C. D. Richmond, who represented the club as official delegate at the Homemakers' Convention at Saskatoon. Mrs. Richmond dwelt chiefly on the instructive talks given at the meetings and the delightful social time enjoyed by the delegates.

A letter was read from the Red Cross Society asking our club to become a Red Cross organization, but it was decided that, as we are doing all we can to help the cause, no object would be gained and we would go on as usual.

A dainty lunch was served by the



**THE FRUIT OF KNOWLEDGE**

Youth: "I wonder why these artist chaps always represent 'Victory' as a female?"  
Experience: "It's plain to see you're not married, my lad."

hostess and all departed, having spent a most enjoyable afternoon.

An important meeting of this club was held on July 31 at the home of Mrs. L. Else, fifteen ladies being present. Articles for the bazaar to be held on August 3rd at Vanguard fair were brought and the afternoon was devoted to the pricing of same and making final arrangements. When this business was completed, lunch was served and a social time was spent, after which the ladies

departed, satisfied with their afternoon's work.

On August 3rd the bazaar was held in a booth at the fair and almost every article sold. The proceeds are to be entirely devoted to Red Cross work. A report of the sale and proceeds will be heard at our next meeting, which will be held at the home of Mrs. Whipple on August 30. M. Else, club reporter.

**HYDE PARK HOMEMAKERS**

Our monthly meeting was held at the home of Mrs. Cavanagh, the member who lives the farthest northeast. Though there were only seven members present, we had a good time. After singing "The Maple Leaf" the minutes were read and affirmed. Then came up for discussion what we should do with the \$22.40 which was raised at our two ten-cent teas. It was decided to send half to the L.O.D.E. to help them with the shack they are opening in North Battleford for sleeping returned soldiers passing through the city and the other half to the North Battleford Red Cross Association, for whom we have been working. We also arranged a Red Cross Bee for July 25th. Then our delegate to the convention gave us a most interesting report. She was running over with hit bits from this lecture and that making us feel how good she had felt it to be there. After which our meeting closed and we very much enjoyed our hostess' hospitality and a cosy chat with our one visitor, a niece of our president, up for a holiday from the States. Of course we wanted to know what the women down there were doing. Minnie Shepherd.

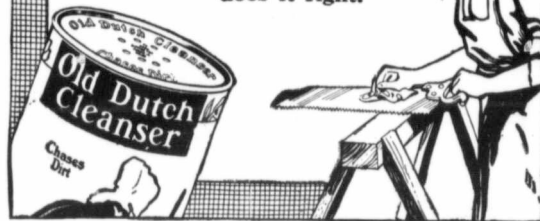
Mrs. A. Martyn Dodd held a very successful ten-cent tea on the 21st of July, raising \$4 for the Red Cross funds. A very Busy Bee was held on the 25th from 10 a.m. to 5 p.m. at Sandwith P.O., 9 members were present, fingers and machines going at a great pace. A big bundle of Red Cross work being finished

**An Attractive Filet Edge for Curtains, Guest Towels or Baby's Petticoat**

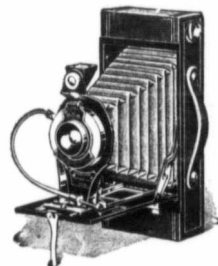
1st row, chain 12. Second row, throw thread over needle and make 1 treble on 6 chain from hook, 2 chain 1 treble and catch into 3rd chain. Repeat till you have 3 meshes. 3rd row, same as second. 4th row, 5 chain, one treble, 2 chain and

**Clean Tools Work Better and Last Longer**

You bet — it pays in time, money and results to keep all tools clean, bright, free from rust. And Old Dutch does it right.



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**No. 2C Folding Auto-graphic Brownie**

The camera fits the pocket, the picture fits the view, the price fits the purse and the capabilities of the instrument fit the farm. Here in a sentence is the story of the 2C Brownie, the easy-to-work camera that makes the new size picture, 2 3/8 x 4 7/8 inches.

Completely equipped with either meniscus achromatic or Rapid Rectilinear lens as desired, Kodak Ball Bearing Shutter with snap-shot speeds of 1/25, 1/50 and 1/100 of a second and the autographic attachment enabling you to date and title each negative at the instant of exposure.

**THE PRICE**

No. 2C AUTOGRAPHIC BROWNIE  
With meniscus achromatic lens . . . \$9.00  
With Rapid Rectilinear lens . . . . . 11.00

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**FOR SALE**—Or would exchange for a good portable of 10 or 25 h.p., a Rumely oil pull tractor, 25-45 h.p., complete with extension rims and self steerer. Been run two seasons. Good reason for selling. W. Garnet Leflar, Dropmore, Man.

**30-40 TRACTOR**—Will sell cheap for cash or what have you to exchange? In good condition, cheap for cash. Also plow nearly new. E. C. R., Box 3164, Winnipeg.



**Synopsis of Canadian Northwest Land Regulations.**

**T**HE sole head of a family, or any male over 18 years old, who was at the commencement of the present war, and has since continued to be, a British subject or a subject of an allied or neutral country, may homestead a quarter-section of available Dominion Land in Manitoba, Saskatchewan or Alberta. Applicant must appear in person at Dominion Lands Agency or Sub-Agency for District. Entry by proxy may be made on certain conditions. Duties—Six months residence upon and cultivation of land in each of three years.

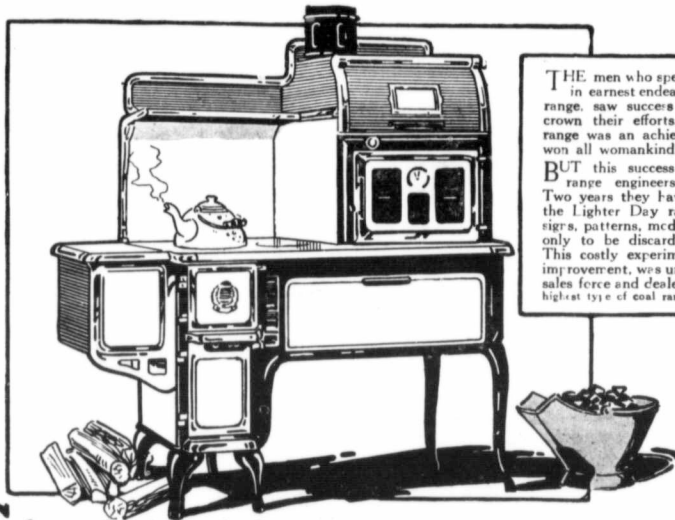
In certain districts a homesteader may secure an adjoining quarter-section as pre-emption. Price \$2.00 per acre. Duties—Reside six months in each of three years after earning homestead patent and cultivate 60 acres extra. May obtain pre-emption patent as soon as homestead patent on certain conditions.

A settler after obtaining homestead patent, if he cannot secure a pre-emption, may take a purchased homestead in certain districts. Price \$3.00 per acre. Must reside six months in each of three years, cultivate 40 acres and erect a house worth \$300.00. Holders of entries may count time of employment as farm laborers in Canada during 1917, as residence duties under certain conditions.

When Dominion Lands are advertised or posted for entry, returned soldiers who have served overseas and have been honorably discharged, receive one day priority in applying for entry at local Agent's Office (but not Sub-Agency). Discharge papers must be presented to Agent.

W. W. CORY,  
Deputy Minister of the Interior.

N.B.—Unauthorized publication of this advertisement will not be paid for.



THE men who spent years of their lives in earnest endeavour to make an ideal range, saw success beyond all thought crown their efforts. The Lighter Day range was an achievement. As such it won all womankind.

BUT this success only spurred these range engineers to greater effort. Two years they have toiled to improve the Lighter Day range. Countless designs, patterns, models, have been made, only to be discarded for better ideas. This costly experiment, this search for improvement, was undertaken to give our sales force and dealers in every town the highest type of coal range that can be produced.

## Clad in blue and white this *NEW* Lighter Day Coal Range

THE Lighter Day gave to women a handy-height oven for baking with coal.

That was two years ago.

In the days before coal, stoves had high ovens.

But when coal came for cooking, and for forty years after, range-makers could not make a coal range with an oven at handy-height.

For forty years women toiled at bend-over ovens. Fine-looking ranges they had, good in many ways—well-built, and durable—but BACK-BREAKERS every one of them. A day's baking was a hard day's work. The stooping, stooping, stooping, made baking day a day of aching backs. It was not coal alone that went into these old style ranges. Health, strength, and youth were the fuel consumed.

### Science Turned to Kitchen Reform

Clare Bros.' engineers solved the baffling problems of heating a handy-height oven with coal. The Lighter Day was invented. A lighter day dawned in thousands of Canadian kitchens.

The Lighter Day was a marvel range.

Engineering skill never did more for womankind.

To Canada's women this Canadian invention seemed perfect. They have written it in letters, thousands of them. But Clare Bros.' engineers studied, criticized, improved. There followed two years of constant experiment, countless tests. Thousands of dollars were spent on new designs, new inventions, and finally new patterns.

### To-day a New Lighter Day Appears

If the old Lighter Day was a marvel range, see now what science has created. Every dollar spent, every month of experimenting, is more than repaid by the labour-and-money-saving improvements now added to the Lighter Day Range.

### Cut the Cost of Fuel

Lighter Day engineers have invented an entirely new way to avoid loss of heat. Coal never was known to produce heat at such low cost. The oven is ready for baking a few minutes after the fire is started. The fire is under perfect control, holding the oven temperature steady for hours. Lighter Day construction will upset all old ideas of range building. It will save money in thousands of Canadian homes.

### No More Blacklead

The new Lighter Day is clad in blue and white porcelain enamel. Specially toughened enamel had to be produced. To make a range that would require no blacklead, new processes of enamelling had to be found. The cooking top is polished brighter than steel. Other cast parts are japanned. A damp cloth will clean any part of this wonderful range.

### Greater Cooking Capacity

The cooking top is made wider and deeper. There is room at the back for kettles or saucepans that require only moderate heat.

The oven has been moved back to leave a shelf. Now one may draw out dishes for basting or testing. The warming closet

is directly heated. It serves as a second oven for baking pies while the roast is cooking in the oven. In addition to the four outside pot-holes, there are holes in both the oven and warming closet. Turnips, cabbage or other strong vegetables may be shut in while being cooked.

The large hot water reservoir is of porcelain enamel.

### No Steel Parts Exposed to Rust or Intense Heat

To make a range that would be almost everlasting called for big changes in construction. No steel range ever made could resist the wearing action of heat and rust. The flues rusted out or I turned out. The Lighter Day is built with flues of porcelain enamel absolutely proof against corrosion.

The fire-box is lined at the back with four ordinary fire-bricks, such as are used in smelting furnaces. If they should become broken, they may be replaced anywhere for a few cents.

### Right or Left Oven

The New Lighter Day has the oven at either the right or left side. Ovens are made 18 or 20 inches wide. Pot-holes 8 or 9 inches.

### Clear Illustrations of the New Lighter Day

If your local range dealer does not sell the Lighter Day range, write for a handsome folder showing every labor-saving feature of this marvel range. Every woman should see for herself what we have done to lighten her kitchen work. Mention this paper and your copy will go to you promptly.

# new LIGHTER DAY range

CLARE BROS. WESTERN LTD., Dept. C.T., Winnipeg

**Special \$1.95**

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Send Samples  
of Your Hair  
15c. Postage

LADIES! Send us your  
combs, not less than  
three ounces. We make  
them up, 50c. oz.

Will add new hair from  
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A Guide for Mothers

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which gives a great deal of useful  
information on the Care and  
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for recording baby's weight, a  
dietary for older children, and  
recipes for simple nourishing dishes.  
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every home. It is not intended to  
take the place of medical advice,  
when such is needed, but it will  
often serve to allay needless  
anxiety, and indicate the right  
course to be pursued.

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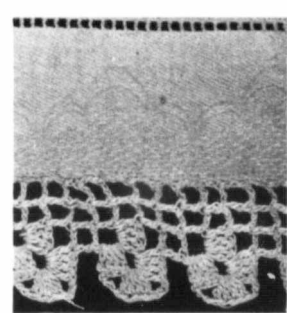
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make 4 trebles into next mesh, 3 chain  
and make 4 more trebles into same mesh,  
turn chain 3 and make 4 trebles into  
mesh between 3 chain, 4 more trebles  
into same mesh, make 3 more meshes and  
this completes the pattern.

**DIRECTIONS FOR YOKE ILLUS-  
TRATED IN AUGUST ISSUE**

Materials required—2 balls crochet cot-  
ton No. 40, 2 yards of braid. To start,  
count ten ovals of the braid, then cut  
nine ovals of the length of your braid  
and sew it on to the tenth, count ten  
more ovals and sew the other end of your  
yine to tenth. This is to form the founda-  
tion for your sleeve.

Count 14 ovals and sew 9 more ovals to



form your other sleeve. Be sure and  
have 10 ovals for the top of the sleeve  
and 9 for the under part and 10 for each  
front. The braid has 6 picots on each  
side.

1st row—Commence in the first picot  
of one oval of the braid with 2 treble, 2  
chain, 2 treble into next picot, repeat 6  
times, then start on the next oval with-  
out any chain between. Repeat to the  
end of the braid.

2nd row—Chain 3 turn and make 3  
trebles into second mesh, 2 chain, 3  
treble into next mesh, 2 chain 3 treble  
into next mesh, 3 treble into second mesh  
on the next oval. Repeat to end of braid.

3rd row—Chain 10 and slip stitch into  
next mesh.

4th row—8 chain, turn treble into  
centre of first space, 4 chain and treble  
into centre of next space. Repeat to end  
of braid.

5th row—8 chain turn, 6 treble into  
first mesh, 4 chain, 6 treble into next  
mesh. Repeat to end.

6th row and 7th row same as 5th row.

8th row—8 chain, turn and make 1  
treble, 5 chain and 1 treble. Repeat this  
to make the space for ribbon to draw  
through.

9th row—8 chain, turn, throw  
over hook twice to make a double treble.  
Make 5 double trebles with 2 chain be-  
tween into same mesh, make slip stitch  
into next mesh, 5 double trebles into  
next with two chain between. Repeat to  
end.

10th row—6 chain and slip stitch into  
each space. This completes top of corset  
cover. Work the first 7 rows on other

side of braid to complete the bottom  
part. Sleeve worked same as top if you  
want your corset cover larger allow two  
more ovals on each front and two more  
for the back. The directions given are  
for size 36.



**DIRECTIONS FOR WORKING TEA  
COSEY**

15 chain 1 treble on the 3 stitch, 2  
more trebles in same stitch, 3 chain and  
make 3 more trebles into next stitch, 4  
chain, skip 4, 3 trebles into next turn and  
repeat till you have 44 rows. Join and  
make 3 double trebles into first point, 3  
chain and 3 double trebles into same  
point, 4 chain and repeat 4 times, as  
showing on pattern, 10 chain, throw  
thread over needle 8 times and catch  
into 3 point and pull thread through two  
stitches at time till you have only 1  
stitch left on needle, 2 chain and repeat  
11 times, 2 chain, skip 1 point on band  
and repeat 11 times, 10 chain, skip two  
points, 3 double trebles into next point,  
3 chain, 3 double trebles into same point.  
Repeat same as other side.

2nd row—Same as first between the  
long trebles, 2 chain, catch in between  
each long treble, just work round and  
round and when the centre comes to a  
point your cosey is finished. It takes 5  
balls of No. 3 crochet cotton.

**A NEW OIL WAGON TANK**

As we are now living in what may be  
correctly styled "The Oil-Fuel Age," any-  
thing that affects the safe storage of oil  
or any idea that will facilitate the carry-  
ing of oils is of peculiar interest to prac-  
tically every farmer and thresherman in  
these days.

We are therefore glad to direct the at-  
tention of our readers to the announce-  
ment on another page of the Winnipeg  
Ceiling & Roofing Company, who have  
just designed and built an addition to  
their "Max" (maximum quality) line of  
products in an oil wagon tank which is  
illustrated at bottom of this page.

The tank here shown is mounted on  
gear for immediate use and little descrip-  
tion is necessary—the picture tells all  
that need be told except that the tank  
is made of best grade of blue annealed  
steel, painted red. All seams are welded,  
heads machine flanged and welded to the  
body of the tank, making a practically  
one-piece construction. It is mounted on  
and firmly secured to a framing of  
4-6 stringers, bolted to angle iron knees  
which are rivetted to rolled steel channel  
bolsters. The tank is equipped with 3-  
inch capped filler hole and faucet ar-  
ranged for locking and may also be had  
with two or more compartments, each  
fitted with filler hole and faucet so that  
more than one kind of oil can be carried  
at same time. In short, apart from the  
extremely handy character of the tank,  
it is a substantial combination of mater-  
ial and workmanship that cannot fail  
to give long service.



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You are assured of these by a "HECLA."  
Think of what it means to the housewife  
to have her house heated with a

**HECLA WARM AIR  
FURNACE**

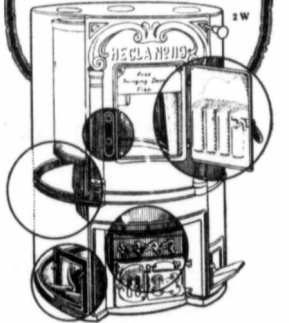
They are big items towards the comfort  
and health of the family—especially the  
kiddies. The picture below shows some  
of the "HECLA" exclusive features—the  
patented fused joints, the steel ribbed fire  
pots—the convenient and scientifically  
correct water pan—the individual grate  
bars—the air jets in the door which turns  
the gas into heat—the easy method of  
attaching water heating coils—and there  
are several other features not shown.

A furnace is something you buy to  
last for years. It's well to take  
time to buy right in the first  
place. A "HECLA" heated house  
brings coal bill satisfaction.

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your present heating system or of in-  
stalling a system in a new house

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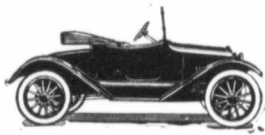


**—COUPON—**

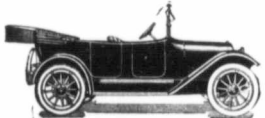
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Dept. CT Winnipeg, Man.  
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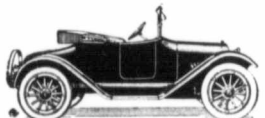
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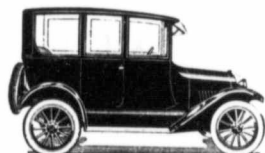
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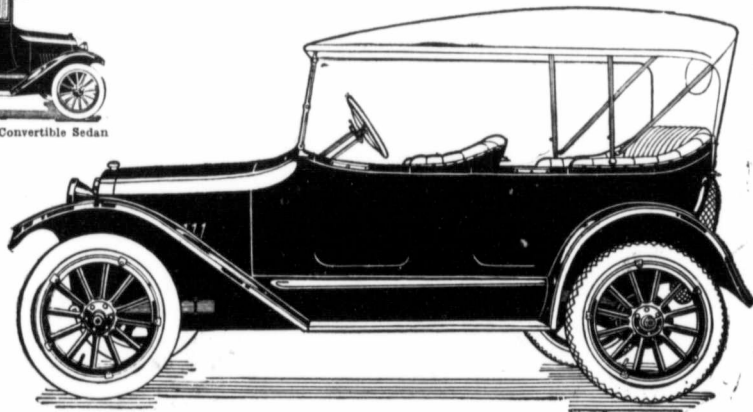
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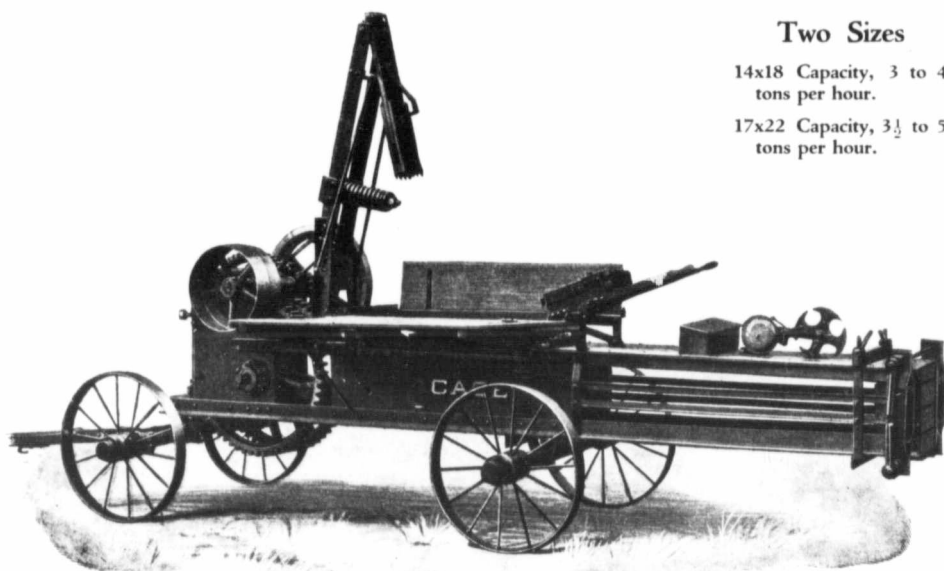


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