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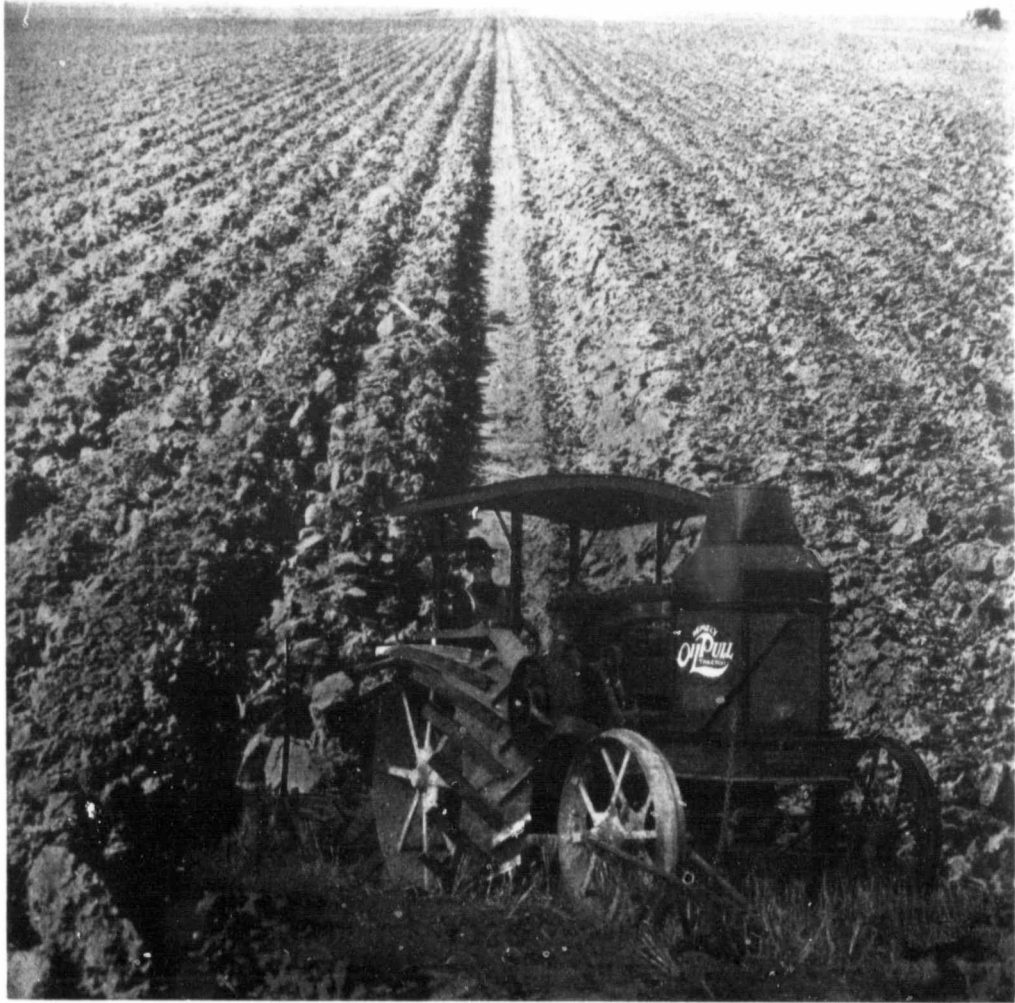
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DEPT. OF  
AGRICULTURE

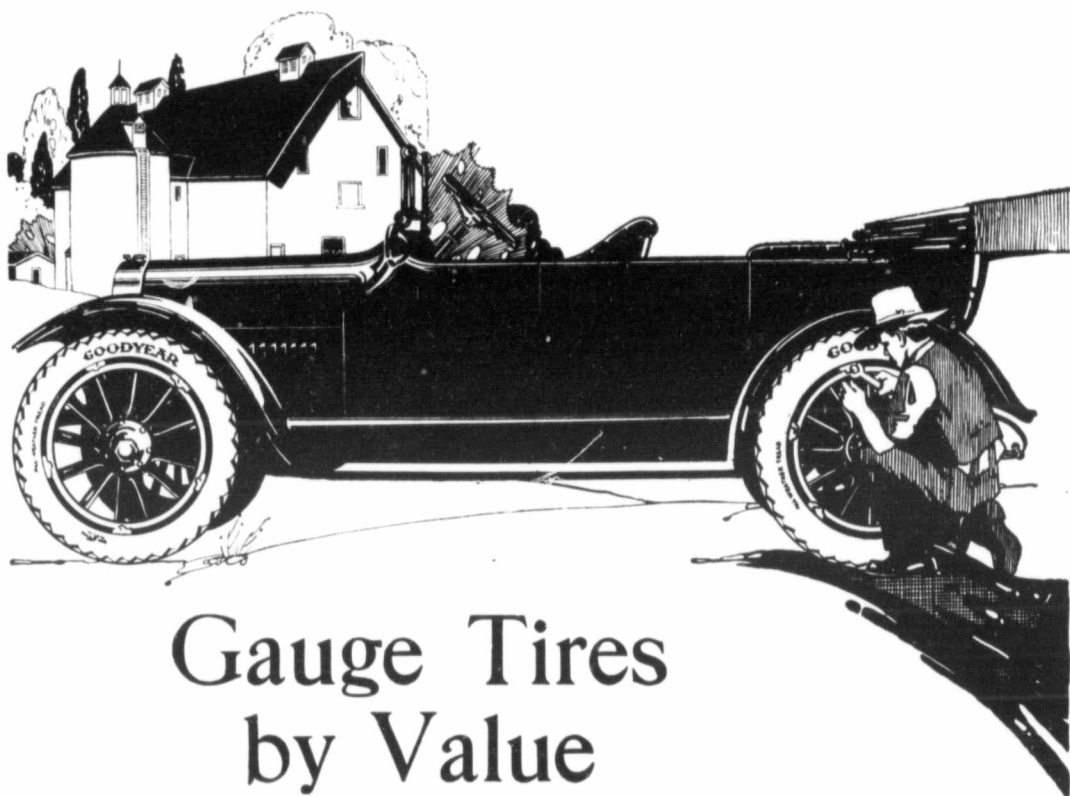
# The **CANADIAN** THRESHERMAN AND **FARMER**

WINNIPEG CANADA  
SEPTEMBER  
NINETEEN NINETEEN

*BETTER FARMING — BIGGER CROPS — BETTER LIVES*



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



## Gauge Tires by Value

The last man on earth to be fooled into buying poor tires should be the farmer.

For nobody has more real knowledge of values.

And there is nothing else to think about in buying a tire. Just value.

The thing which counts most is—how many miles of wear are there in it?

Remember that and save money.

Figure, also, the protection against skidding and punctures afforded by the tread. Figure the appearance added to your car.

So, it doesn't much matter what you pay for a tire in the first place.

What *does* matter is what you pay per mile of service.

Goodyear Tires were the first to be sold on this basis. We were the first to ask motorists to buy tires on this basis.

It was then the Goodyear business started its tremendous growth. It was by that means that the real quality of Goodyear Tires was proven.

And because car owners have learned to buy tires at so much per *mile* instead of so much per tire, Goodyear has become a gigantic institution—the largest tire builders in the world.

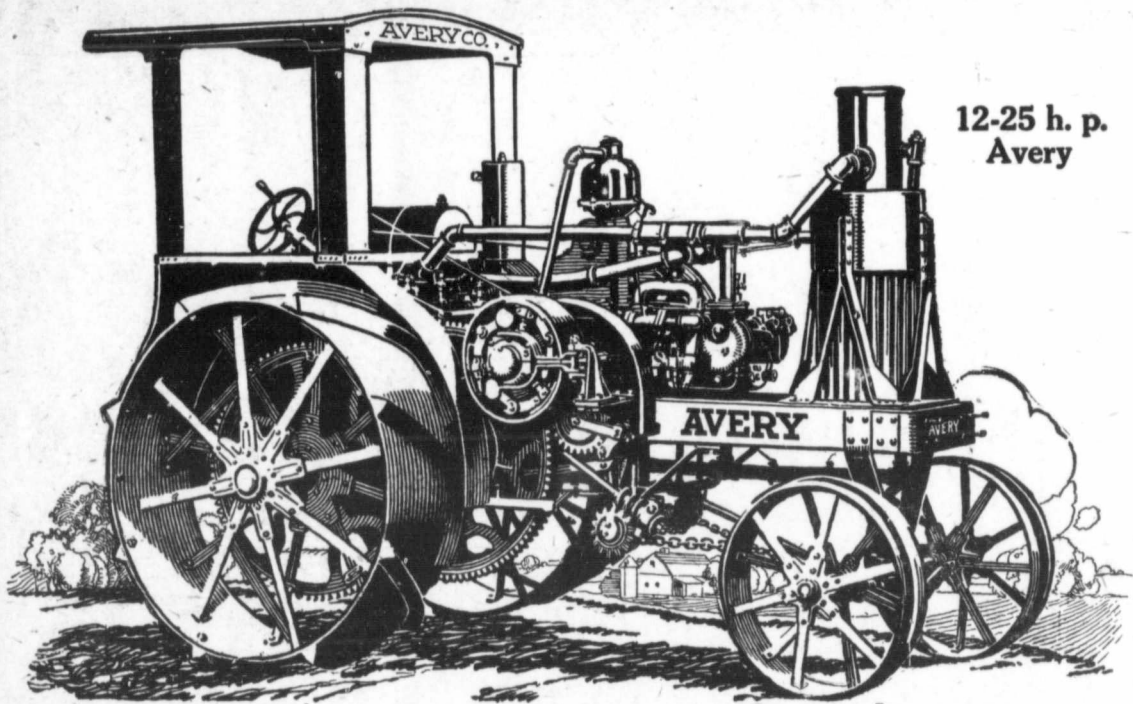
Buy tires as you buy everything else you use—on a quality basis.

Watch your own mileage and check up with your friends. You will come to Goodyear Tires.

And when you do, talk to the Goodyear Service Station Dealer.

The Goodyear Tire & Rubber Co. of Canada, Limited

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12-25 h. p.  
Avery

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It is the practical size tractor for the great majority of farmers. Pulls three plows regularly—pulls four under favorable conditions. Also will pull five or six disc plows. The handy size for discing and harrowing—and it is not too heavy for drilling.

Easily pulls two binders; has plenty of power for running a small thresher, silo filler, wood saw and other belt machinery. It is the tractor you can profitably use every month of the year.

Built with *all* the famous Avery features.

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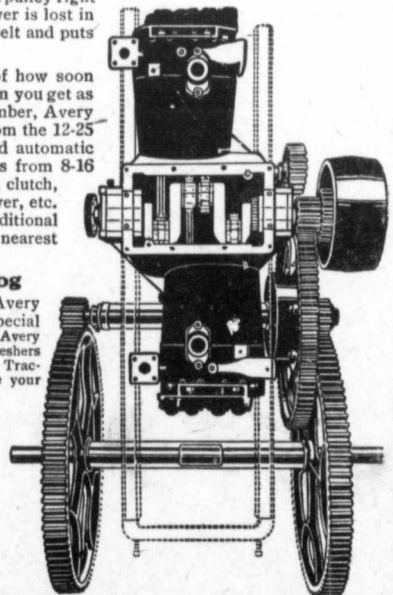
The power is delivered through the Avery "Direct-Drive" Transmission which gives you direct drive in high, low, reverse or in the belt. Has only three gear contacts between motor and drawbar. All gears are straight spur gears, are easily accessible—yet well protected.

Has a low speed motor with large belt pulley right on the end of the crankshaft. No power is lost in the belt. Has large contact with the belt and puts *all* the power of the motor into it.

Here is your answer to the question of how soon to start motor farming. Where else can you get as big a value at a popular price? Remember, Avery Tractors are completely equipped. From the 12-25 H. P. up, a well constructed cab and automatic coupler is regular equipment; all sizes from 8-16 H. P. up have wheel guards, plow hitch, clutch, steel platform, lugs, safety starting lever, etc. You don't have to spend a lot of additional money to equip an Avery. Ask your nearest Avery dealer.

### Write for the Avery Catalog

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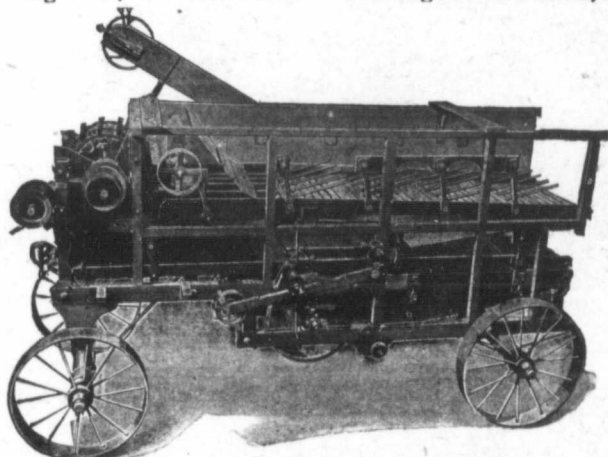
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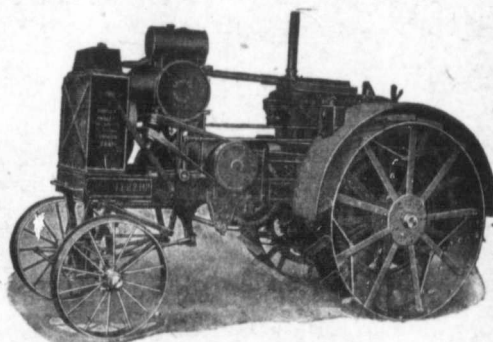
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Vol. XXIV

WINNIPEG, CANADA, SEPTEMBER, 1919

No. 9

THE hunger of the human for knowledge—for exact information on things that excite his curiosity or touch some vital spot in his little-world of interest is an appetite that can never be fully satisfied. Under normal conditions, there are few things which will more effectually bestir a man than a consciousness of being in the dark on something that he must get to know about, on which a state of ignorance is fatal to some supreme interest in his personal affairs.

This hunger at times has got a keen edge on it, but when the man is for the moment placed beyond the reach of obtaining the information, the desire takes on something of the nature of an insatiable craving. It seems (from the lives of some of the greatest of the world's workers) that in order to get a man to seriously set about enlightening himself, it is necessary that he should be goaded on by the relentless steel point of necessity.

The men who have survived the 52 months of the great war and who were really in it, know to a nicety just what this means. We all know it, more or less, but there are few who have ever got the experience so thoroughly rubbed into them as those bright spirits who were suddenly torn from their desks, class rooms, workshops and machine tools and set to work for days and weeks at a time—doing nothing more than watching the enemy and

## Putting the Army to School Again

*"Nothing in the shape of Adult Education has ever been attempted on the same scale in the history of the world."*—

*British Minister of Education.*

digging shelter trenches for a change of occupation.

It was little more that the soldier man could then do but "wait and see." That was one

Not only may we have a verbal acknowledgment from these men—any of them who left their schools or their jobs and went overseas—that the above has

al training scheme within the British Army which is having far reaching results and will continue with the army of occupation. He related the following incident:

"A private wrote home a little while back a letter which was certainly never intended for my eyes, in which he said that since the institution of these classes his whole life had been changed.

"He was billeted six miles from Lille, and had various military duties to perform, but after these

were over he walked in every day to Lille to attend a class—six miles in and six miles out. We read of such things during the Revival of Learning at the close of the Middle Ages, but I venture to think that five or six years ago no one would have believed it possible of an Englishman. All that we have done and all that we are trying to do is to meet this new manifestation, evidence of which can be seen everywhere.

"The other day a gentleman closely in touch with educational

affairs stated that in his opinion when the history of the war came to be written historians of the future would pick out this movement as the most significant thing in it. It is undeniable that out of these years of destruction there has arisen this one constructive element, the desire for self-improvement, which we see not only in the army but in the nation at large."

Immediately after the signing of the Armistice, educational work became, as had always been



Young Manitobans getting a practical demonstration in the great principle of co-operation from one of the greatest "Industrial Corporations" on earth.

of the most trying experiences in playing the waiting game the pressure of necessity has ever called on men to pass through. The libraries of these constantly shifting funk-holes and gun-pits were of the most circumscribed nature, and because of its very inaccessibility, what would not some of our magnificent men have given for a thin, India paper edition of the Encyclopedia Britannica, the "Book of Knowledge," or even Mrs. Beeton's Cookery Book!

fairly described their feelings on many an occasion during their period of war service, but we are having a wonderful demonstration of their keenness in getting "in touch with nature again" in the rush which is being made for the various educational institutions as the winter season approaches.

A few weeks ago in England, Colonel Lord Govell, of the Military Education Department, gave an address to the Royal Colonial Institute, on the great education-

foreseen, no longer of secondary importance. As one general staff officer who had previously been engaged upon directly military work said to me, "We are all educationists now." Schools which during fighting had been devoted to training in the military arts were converted one by one into training for civil employment, and so on; to name no others, we have now actual universities at both Bonn and Cologne. The work was taken up enthusiastically by whole units. It was found, as it became possible to get more definite returns of what was being done, that the army was succeeding in giving education to many who had up to that time slipped entirely through the civil educational mesh. That is to say, considerable numbers were found who had never had any education at all worth speaking of, in some cases literally none, coming from, for instance, those who had been employed upon canals, or those who had gone early to sea, and for such classes in the three Rs were, of course, the most helpful.

According to the latest returns, when the army has naturally lost through demobilization very large numbers of men, there are between 400,000 and 500,000 undergoing instruction in classes in France alone, and in addition to all those who have been lectured to in their units it is estimated that at least a million have attended the lectures organized by divisions.

Speaking at the school at Cambridge, the President of the Board of Education dwelt upon the size of the work, and stated that "nothing in the shape of adult education has ever been attempted on the same scale in the whole history of the world."

Throughout the whole of the work we have had three main objects before us: first, to maintain contentment; secondly, to broaden and quicken intelligence; and thirdly, to give men practical help in the work they intend to undertake after the war. This latter object, and the fact that except for the boys the whole of the work has been voluntary, has

necessarily led to a great diversity of subjects which we have endeavored to meet as far as it has been in any way possible in the local conditions. As far back as June of last year instruction was going on in no fewer than fifty-seven subjects, and that number has risen recently to over 160.

It should perhaps be emphasized that the scheme applies equally to officers and men, and both have taken advantage of it.

An officer not connected with the organization above referred to stated to the President of the Board of Education that he had been specially assigned to investigate questions of grievance in a certain unit, and after addressing

these disposers of the fate of nations are past middle age, some of them are venerable. There is not a young man, or even a moderately young man, amongst them.

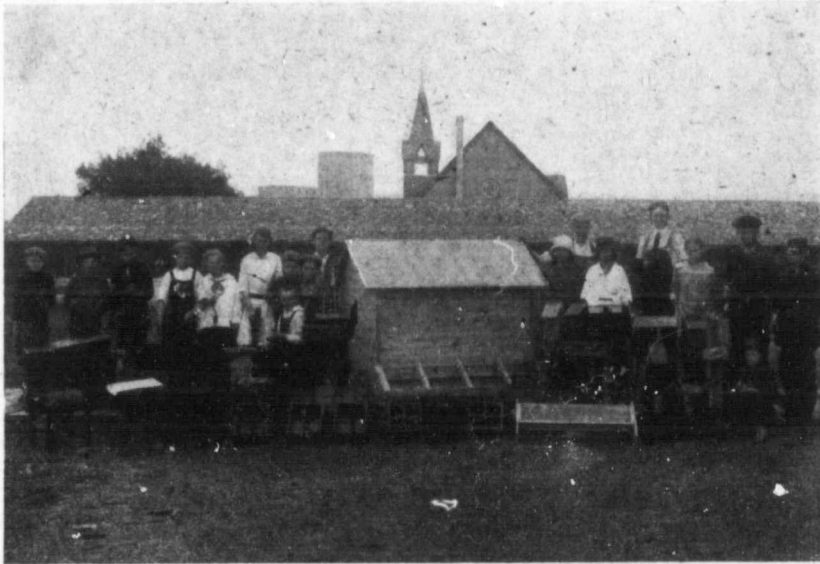
"Take the most conspicuous figures of all. Mr. Lloyd George has the fire and energy of youth, but he is fifty-six. President Wilson is sixty-three, Mr. Balfour is past seventy, Monsieur Clemenceau is a 'grand old man' verging on fourscore, Baron Sonnino is seventy-two, even Lord Robert Cecil is in his fifty-fifth year. International Congresses have usually been composed of statesmen well advanced in years. But this Paris Congress has a higher average than that of Vienna in 1814, when Wellington was no more than forty-five, Metternich forty-one, and the Emperor Alexander thirty-seven, though it is true Talleyrand was sixty and Hardenberg sixty-four.

#### Done by the Older Men

War and revolution are supposed to give opportunity to youth. They did in the last great series of world conflicts and upheavals; with the young Napoleon (seven-and-twenty when he led his conquering legions across Lombardy and

brought Austria to her knees), the young Murat, Ney, Lannes, Hoche (died at twenty-nine), Soult (Marshall at thirty-five), Wellesley (thirty-four at Assaye); Nelson, closing a life of victory at forty-seven; Pitt, dying after his twenty-two years' premiership at the same age. But in the last five years all the greater work seems to have been done by the older men. Youth has died in its millions with quenchless heroism and devotion, and some young officers have held important subordinate commands. We have heard of colonels of twenty-five and brigadier-generals under thirty. Nevertheless, it remains true that nearly all the names of which the historian will take note are those of men who have left their youth far behind them.

"It is so in all the armies. There was scarcely a leader of (Continued on Opposite Page)



Some more Manitobans who are already not only "practical" young men and women, but are also artists in their own line of beautification.

the men generally, he stated that he would willingly hear any individual grievance provided it was not a purely personal 'grouse'; and he said that the one main grievance that was brought to him was that in that unit by reason of the difficulties of its organization there had been no educational lectures. In his opinion there was an absolute hunger for knowledge which was very significant.

From many sources we know what this officer has stated to be the fact. Our own Canadian boys are returning with a perfectly gluttonous appetite for a continuance of the educational pursuits they were pursuing when the call to arms reached their ear. True there are a goodly number of men "bumming" about who give little evidence of a desire to settle down.

But these chaps were of the bumming type before they were

everywhere come into its own and has thrust old age and middle-age into the background. 'We are living, beyond question, in the day of the young man; all the kingdoms of the world are in their hands.'

"Mr. Waugh says his proposition is 'beyond question'; yet I venture to question it. I am unable to see that the kingdoms of the world have been given over to the young," says Sir Sidney. "On the contrary. The old and elderly are more powerful and influential than ever before, and youth is conspicuously absent from the ruling and governing councils.

"As I write, the destinies of the kingdoms, empires and republics of this world, and all that in them is, with that of their peoples for perhaps centuries to come, are being decided by a select conclave of great personages sitting in Paris. Nearly all

NOT infrequently, our worst enemies become our best teachers. Germany set a mighty poor example to the rest of the world, but we should be fools if we failed to take advantage of some of the lessons she has taught the world.

Germany has taught us much in efficiency and organization but the greatest single lesson of the war has probably been taught us in the remarkable unity of thought and purpose which the



SIR ROBERT FALCONER

President of the University of Toronto, who will address the National Educational Conference in Winnipeg, October 20-22, on "The Development of a National Character Through Education."

German nation had achieved through a generation of educational effort directed to one single national objective. We need not adopt Germany's objective but, substituting one that is compound of high national ideals and moral purposes, we may adopt her general method and adjust it to our own needs.

Canada is today suffering from the results of nearly five years of war strain. Whether, as a nation, we shall preserve our unity and emerge from the period of reconstruction a better and a stronger nation than ever depends upon the qualities that go to make up the Canadian character. More than ever we are in need of stout resistance to the forces of disintegration that threaten our national existence from within. In other words the one thing needful for our future integrity as a nation is a trained citizenship, a citizenship with lofty ideals and worthy purposes.

A great effort to enlist our educational institutions on the side of character training for citizenship is the National Educational Conference which has been called to meet in Winnipeg, October 20-22nd.

Delegates are being invited from all parts of Canada and from every organization and association in the country. Leaders of discussion have been chosen in such a way as to make them most

## The National Educational Conference

representative of the nation at large. Three university presidents, Sir Robert Falconer, of Toronto, Dr. Finley, of New York, and Dr. Suzzalo, of Seattle, will be among the speakers at the conference. In addition to these notables the following well-known public men and authorities on public questions will deliver addresses: Hon. Dr. Cody, Minister of Education, Ontario; Dr. Theo. Soares, University of Chicago; Dr. Helen MacMurphy, Ontario Department of Education; Dr. James W. Robertson, Dominion Commissioner of the Boy Scouts, Taylor Statten, National Secretary Boy's Work Department of the Y.M.C.A.; Dr. J. F. White, Principal Ottawa Normal School; Michael O'Brien, Toronto; Dr. J. T. M. Anderson, Director of Education among New Canadians; Dr. Milton Fairchild, Washington, D. C.

The convention is one that should appeal to every public spirited citizen in Canada.

### PUTTING THE ARMY TO SCHOOL AGAIN

(Continued from Page 6)

eminence in the British, French, German, Italian, or Russian hosts who was under fifty. Foch, Petain, Mangin, Joffre, French, Haig, Jellicoe, Plumer, Byng, Allenby, Hindenburg, Luden



PRESIDENT J. H. FINLEY,

University of New York, who will speak before the National Educational Conference in Winnipeg, October 20-22.

dorff, Mackensen, Alexeiff, Brusiloff, Ruskoff, Codorna, were beyond that age, in some cases a long way beyond it.

#### Where are the Young Men?

"So also in politics and administration. The direction has been with the veterans throughout, men of middle age or in their

sixth or seventh decade, like Mr. Asquith, Lord Kitchener, Mr. Bonar Law, Lord Crewe, Lord Milner, Monsieur Pichon, Monsieur Viviani, Lord Rhondda, Bethmann-Hollweg, Czernin, Hertling.

"In our British lists I can only recall three men under fifty who have played parts of first-rate importance, that is to say, Admiral Beatty, Sir Eric Geddes, and Mr. Winston Churchill (and Mr. Churchill is older than his father was when he died, or than Pitt at the Peace of Amiens). So it does not, therefore, seem to me that les jeunes have had a substantial share in moulding the new world.

#### The Men in Literature

"Nor can I see that youth has planted its flaring banner high above the drooping flags of their elders even on the field of literature. The soldier-poets, of course, were young. But, after all, it is still the older men who have left their mark. Whose are the great war-books? Perhaps there have been no really great war-books. But, such as they are, the more notable among them come from well-tryed hands, hands that have plied their trade this twenty or thirty years or more.

"It does not seem that youth, for one reason or another, has felt, or at least has responded to, the stir and thrill of these years of strife as it did during the lesser cataclysmic era of the last century, when we had, the young Byron, Shelley, Wordsworth, Coleridge, Keats. But perhaps the full literary efflorescence is to be not so much the harvest, as the aftermath, of war," concludes Sir Sidney Low.

### THE TRACTOR AND ITS OVERLOAD

By L. G. Heimpel

TO overload a tractor is a great mistake. Any load which drags the speed of the engine down to below governor speed for any length of time is an overload. There are a great many tractor owners who are not satisfied to hear their motors purr along in a nice way, which shows that she is handling her load easily; they must load her down. Why so many men seem to delight in stalling a tractor is a mystery. Any one who knows what it means to the machine will certainly not do it. Overloading is the quickest way to shorten the life of a tractor of which we have become acquainted to date.

It is a good policy when buying a tractor to be sure to choose a machine with plenty of power for what we want it to do. If we buy a machine which is supposed to pull two plows, and we find that it plays with its work, it is a mistake to put on a third plow. You can depend upon the manufacturer's word when it comes to rating tractor motors high enough. Only very few machines to-day are underrated, and it



DR. THEO. SOARES

Prof. of Religious Education, University of Chicago, who is to deliver an address on "The School and the Development of Moral Purpose" before the National Educational Conference, which is to be held in Winnipeg, October 20-22.

would be a great blessing for the tractor industry if tractor manufacturers would get together and agree to rate their motors at from seventy to eighty per cent of their actual power when running at the speed at which they are supposed to run when at their work. This would give the prospective buyer some basis upon which to compare different machines, would tend towards standardization of tractors, and would go a long way toward stabilizing the tractor industry.

The tractor is a good machine and if given no more than its load to do, will go a long way without a murmur. But when given an overload and when asked to pull it continuously, it will give way almost immediately. The engine will "run hot"; pre-ignition and knocking are sure to follow; cylinder oil cannot continue to perform its duty properly under the excessive heat and improper lubrication with attendant loss of compression and consequent loss of power must result. The crank shaft and transmission system will be fairly quivering, while bearings become hot and loose under the strain. In short, an overload very soon kills a tractor.

No matter what the horsepower your tractor is rated at, nor what the salesman said it would do, remember that you are the engineer.

# THE CANADIAN THRESHERMAN AND FARMER

## CANADA'S LEADING AGRICULTURAL MONTHLY



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Sept.

A Millionaire's Mistake

1919

### OUR GUARANTEE

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THE late F. W. Woolworth said that the education he got in two terms in a business college at Waterton, New York, did him more good than any classical education he might have got! This Woolworth is the man who founded and was the executive head of the great chain of Five and Ten Cent Stores whose phenomenal success made his name almost a household word in America. He died at the age of sixty-six, and some idea of the magnitude of the business he built up may be gathered from the fact that last year (1918) these stores did over a hundred million dollars of business, and he is reported to have left a personal fortune of at least sixty-five million dollars—an accumulation of a million dollars for every year of his life!

But the mere fact that this man was a great merchant gives no authority whatever to his opinion on education. It has been repeated in the press that he held the opinion that colleges and universities are rather useless luxuries, and that the education they provide is of little practical value.

This is a most unfortunate "break" in an otherwise remarkably fine career, for when a man of Mr. Woolworth's romantic, interesting and in many respects highly creditable success, condemns higher education, his opinion makes an impression upon boys and young men entirely out of proportion to its real value. As a matter of fact, it is doubtful if this merchant prince ever stopped to think of the invaluable support directly contributed to his success by the higher education of our colleges and universities.

Take the factor of industrial chemistry alone, (we are quoting from a righteously indignant contemporary): applied chemistry is the very foundation stone of modern agriculture and manufacturing, and chemistry is the product of the most serious, painstaking and self-sacrificing study and research in the libraries and laboratories of our colleges and universities. Chemistry is not merely a matter of acids and test tubes. It could not have reached its present stage without the aid of literature, and even of classical literature. If it were not for industrial chemistry, the billions of hairpins, the sale of which contributed to Woolworth's fortune, could never have been manufactured, nor could the wheel of a locomotive or freight car have turned, without which he could not have shipped his goods.

If it had not been for the classical and scientific work of our universities, Mr. Woolworth's "two terms in a business

college" would have been of little help to him. It is not suggested that he himself ought to have had a classical or scientific education, but we do affirm that the great men of affairs of this country ought to realise more than they sometimes appear to realise that arduous, faithful, self-sacrificing, intellectual training of the highest type is as essential to business supremacy as the proverbial devotion of the budding office boy to the daily mercantile transactions in the village store in which he is employed. Will the merest transport-driver ever again poo-poo a higher education as he recalls how our university scientists helped him successfully to combat the devilish efficiency of Germany in the great war?

Indeed, the great monument which Mr. Woolworth left behind him clearly demonstrates his dependence on the 'higher education' and shows that in practice he respected it, whatever may have been his theoretical views expressed for newspaper publicity. That monument is the Woolworth Building, one of the most beautiful and famous productions of art and science in the modern world. Not only New York City, but the entire United States owes a debt of gratitude to Mr. Woolworth for that splendid architectural creation. He conceived the idea of building the tallest building in the world as a symbol of what can be done with nickels and dimes. Did he go for aid to men who had spent "two terms in a business college?" Not by any means. He had the wisdom to select an architect and engineers who had spent many years of their life in acquiring a classical and scientific education.

This great New York business block is an embodiment not only of engineering, chemistry and metallurgical science, but of classical art and literature. Wherefore let us be fair to our colleges and universities, and let not us disgrace ourselves and parade our boorish ignorance of the commonest facts in life by any such depreciation of the college and university course as is wrapped up in Mr. Woolworth's belittling statement with regard to these institutions. Just sit down and think as you look around the room of the multitude of things in sight within the four walls without which life would scarcely be tolerable, not any of which could ever have come to the surface but for the investigational work, experimenting and discipline of the college. Young men and women we urge you to do your own thinking when you hear this lop-sided estimate of "a college training." There is not a more suicidal heresy in the world to-day.

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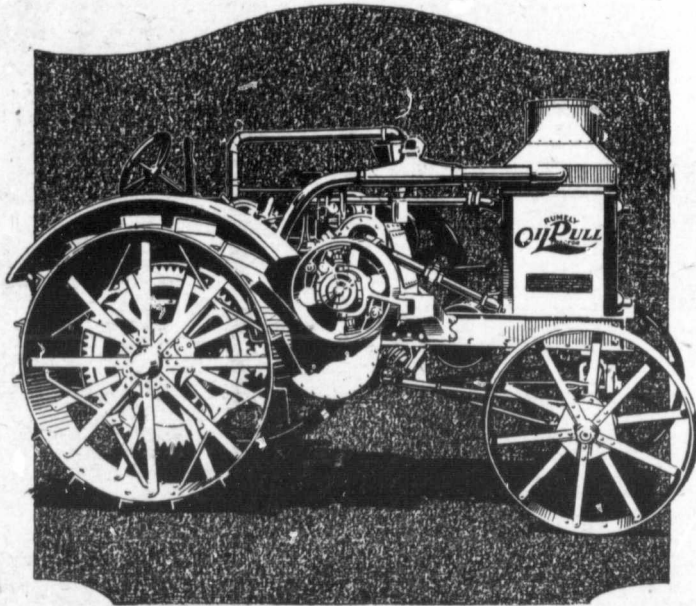
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## Cheapest in Cost per Year of Service

On what basis are you going to buy *your* tractor—by the dollar of cost or by the years of service?

Advance-Rumely is one tractor manufacturer who insists upon putting quality first. By quality we mean rugged, dependable construction, surplus power, real fuel economy and all around service.

In building the new 12-20 OilPull, Advance-Rumely refused to put out a cheap, lightly constructed tractor. We know and you know that durability can't be combined with cheap, light construction. And if a tractor won't "stand the gaff" nothing else about it counts for much.

We have embodied the proved OilPull ruggedness and substantial construction in this small, light weight 12-20. And by light weight we mean *right* weight—the proper weight to give long lasting, year after year, dependable service.

Like all OilPull tractors, the 12-20 is backed by a *written guarantee* to burn successfully all grades of kerosene under all conditions, at all loads to its full rated brake horsepower.

And just as Advance-Rumely guarantees its OilPull tractor as a cheap fuel burner, it insists upon giving the purchaser a surplus of power. The 12-20 rating is based upon only 80 per cent of its maximum power efficiency—a 20 per cent overload capacity when you need it. This means further insurance of long life—a tractor that will

be doing the same good work five years hence as in its first season.

The 12-20 is oil-cooled—no evaporation and the radiator can't freeze. The circulating system is always open and oil preserves the metal parts. The OilPull cooling system keeps the motor at the right temperature at all loads—the harder the OilPull works, the cooler it runs.

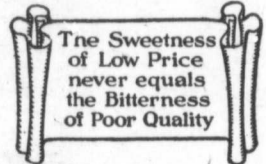
On the 12-20 the belt pulley is on the right hand side—up within full view of the operator. The 12-20 can be lined up with a belt machine, hauled into the belt and the belt started and stopped from the platform. The belt pulley is driven direct off the crankshaft—no loss of power.

The 12-20 OilPull will pull three 14-inch bottoms under ordinary conditions and a proportionate number of disc plows. It will operate a 22-inch thresher fully equipped and economically handle all other power jobs, drawbar or belt.

To safeguard the customer's best interests Advance-Rumely maintains 27 branch offices and warehouses, each equipped to give immediate service in machinery, parts and expert help.

The wise farmer will buy a tractor by the year—not by the dollar. Just as the OilPull will plow an acre at lower cost than any tractor built, its cost measured in years of service makes it the cheapest tractor obtainable.

Ask for the catalog describing the new 12-20.



**Fuel**—Guaranteed to burn kerosene successfully under all conditions.

**Cooling**—Oil cooled—no evaporation—non-freezing.

**Motor**—Heavy duty, 2 cylinder 6 in. x 8 in.—560 R. P. M.

**Crankshaft**—Built to U. S. naval specifications.

**Frame**—Hot riveted steel members—no bends—no splices.

**Transmission**—Cut steel gear—enclosed and running in oil.

**Bearings**—Hyatt roller bearings in transmission and rear axle.

**Governor**—Fly ball throttling type—automatic speed regulation.

**Belt Pulley**—19 inch diameter—running directly off crankshaft—no intermediate gears.

**Lubrication**—Force feed and splash.

**Speeds**—Two forward—one reverse.

**Drawbar**—Adjustable spring drawbar.

ADVANCE-RUMELY THRESHER CO., Inc.  
La Porte, Indiana  
Toronto, Ont.



# ADVANCE-RUMELY

Remember the Date---  
**October 20-22**

## National Educational Conference At Winnipeg

PROMINENT SPEAKERS—LIVE SUBJECTS

In advance of the definite program in the form in which it will be issued at the time of the Conference, the Convening Committee announces that the following items are definitely assured:

- 1—Salutatory Addresses—By His Excellency the Governor-General of Canada, Sir James Aikins, Lieutenant-Governor of Manitoba, and His Worship C. F. Gray, Winnipeg.
- 2—"The Lessons of the War for Canadian Education," Hon. Dr. Cody, Minister of Education, Ontario.
- 3—"The School and the Development of Moral Purpose," Dr. Theodore Soares, Professor of Religious Education, University of Chicago.
- 4—"The Development of a National Character Through Education," Sir Robert Falconer, President University of Toronto.
- 5—"The Essential Factors of Education," Dr. Helen MacMurchy, Ontario Department of Education.
- 6—"The Boy Scout Movement as an Auxiliary to the School in Moral Training," Dr. James W. Robertson, Dominion Commissioner of the Boy Scouts.
- 7—"Methods and Ideals of the Canadian Standard Efficiency Training Groups," Taylor Statten, National Secretary Boys' Work Department of the Y.M.C.A.
- 8—"The Function of the Public School in Character Formation," Dr. J. F. White, Principal Ottawa Normal School.
- 9—"Education and Reconstruction," Peter Wrigat, British Seaman's Union.
- 10—"The Basis of Moral Teaching," Michael O'Brien, Toronto, Ont.
- 11—"The School and Industrial Relationships," Dr. Suzzallo, President University of Washington.
- 12—"The School and Democracy," President John H. Finley, Commissioner of Education for the State of New York, Albany, N.Y.
- 13—"The School and the Newer Citizens of Canada," Dr. J. T. M. Anderson, Director of Education among New Canadians, Regina, Sask.
- 14—"The Interest of the State in Character Education," Dr. Milton Fairchild, Washington, D.C.

The task of initiating discussions has been assigned to persons representative of all parts of Canada. Among those definitely secured at this date in this connection are:

Dr. Clarence McKinnon, Principal Pine Hill College, Halifax, N.S.; Prof. H. T. J. Coleman, Dean of Faculty of Education, Queen's University, Kingston, Ont.; J. J. Tompkins, Esq., Vice-President University of St. Francis Xavier's College, Antigonish, N.S.; Very Rev. Dean Llywedd, All Saints' Cathedral, Halifax, N.S.; Dr. H. P. Whidden, M.P., Brandon, Man.; Prof. Iva E. Martin, Royal Military College, Kingston, Ont.; Prof. W. H. Alexander, University of Alberta, Edmonton, Alta.; Dr. G. W. Parmelee, Deputy Minister of Education, Quebec; R. W. Craig, K.C., President Winnipeg Canadian Club and Chairman Winnipeg School Board; Dr. John MacKay, Westminster Hall, Vancouver, B.C.; R. L. Torrance, Manager Royal Bank, Guelph, Ont.; W. A. Buchanan, M.P., Lethbridge, Alta.; W. McL. Davidson, M.P.P., Editor, Calgary, Alberta, Calgary, Alta.; W. G. Raymond, Esq., Post Master, Brantford, Ont.; Prof. C. B. Sissons, Victoria University, Toronto, Ont.; W. J. Sisler, Principal, Strathcona School, Winnipeg.

Delegates to the Conference should make their hotel reservations immediately.

The following committees are at your services: Reception, Entertainment, Transportation, Hotel Accommodation.

Address all Communications to

**THE GENERAL SECRETARY, NATIONAL EDUCATIONAL  
CONFERENCE**

505 Electric Chambers, Winnipeg

## Tell Us Tractor Truths

By J. K. EKBLAW

HOW many times have you not heard a demand like that, or one similar to it? Every one wants to know. Why is it? It is just simply because the field of the tractor is so large; the conditions under which it is used are so different, the abilities of different tractors are so variable, that what is said about a certain tractor in one place, under certain conditions, will not entirely apply to what is said about another tractor in another place.

There are strong proponents for and vigorous opponents of the tractor. Some figure its limitations to be definitely circumscribed in a certain way, others give it more latitude in application, still others give it less. The equine enthusiast condemns the tractor unqualifiedly; another man cautiously and conservatively admits that a tractor has a certain sphere of usefulness, but you can't get along without horses anyway; and at the other extreme is the occasional farmer who has entirely motorized his farm, and has not a single horse on the place. The average man, however, has, we believe, a pretty sincere belief and faith in the tractor, even if he can't name the best one or if he isn't sure just what it could do for him, or if he's waiting to get one when they are a little better standardized.

### Must Use Common Sense

In discussing tractors, we have to use common sense. The tractor has been on its way for some little time, but the last stages of its advancement have been by leaps and bounds, and its sudden and tremendous arrival has in a way caused a little confusion. We are likely to be over-enthusiastic in our welcome to it, and perhaps we may regret it a little afterward. But the tractor industry is sound and substantial; there are hundreds of thousands of tractors around us, and they are apparently going to stay. So we had better just settle down to a calm deliberative frame of mind, and use fairness and consideration when we think of them, common sense when we talk about them, and good judgment when we buy one.

Undoubtedly there have been a great number of sad failures with tractors. This has been due to a number of causes, some beyond ordinary control, but in others responsibility can be readily located. It may be the manufacturer — he might have used poor materials in a poorly designed machine, or his agents might have sold the wrong size

of machine to the customer. It may be the customer's own fault — he may not have properly considered his own requirements, and thus bought the wrong machine.

### Tractor Justifies Itself

The big important fact that remains is that the tractor has in general justified itself in farming in the United States and made possible the cultivation of a much larger acreage than could readily be handled with horses; it has found a secure place on mid-West farms of the corn belt, where it is used for a wide variety of purposes; and it is rapidly extending its usefulness to the even smaller farms of the east and south, in regions where the cynical pessimists a few years ago declared a tractor never would be worth while.

It has been given governmental recognition as a tremendous factor in increasing food production — it is being used on national reclamation projects, by state councils of defence, even by local civic organizations. Farmers, the country over, are finding it of incalculable aid in solving the labor problem; one man, a tractor, and the right kind of supplementary machinery can accomplish as much as two or three or several men under old conditions and with old equipment. Thousands of tractors are going to Europe to aid agriculture there.

### Horses Not Decreasing

It is going to be an increasingly strong demand for tractors of the right size and type. Of course, horses are still going to be used, and as a matter of fact, horse censuses show that their number are not decreasing. However, the tractor is going to take its place with the other desirable and labor-saving machines on the farm, so let us do our best to see that we get the right tractor of the right kind in the right place.

### Hallowed Bones

Before leaving the States every member of a certain corps of colored engineers was presented with a New Testament. Some weeks after arrival, at a special service held in camp, the chaplain noticed that one darky did not possess his copy.

"Sam," he inquired, "didn't you get a Testament?"

"Yassuh, yassuh," replied Sam, "and dat book sho' done brought me luck!"

"How's that?"

"Waal, ah swapped dat 'ere testament for a pair of bones, and dese bones am de luckiest bones I see ever had."

## SOLDIER SETTLEMENT BOARD

## FARM LANDS WANTED

**I**N order to facilitate the settlement of Returned Soldiers on farms in Manitoba during the Early Spring of 1920, it is proposed to consider and inspect this fall suitable lands offered to the Board. Owners having such properties for sale are requested to immediately list their holdings with the Board, giving full particulars and a price which will hold good until December 1st, 1919.

The co-operation of Municipalities in which any considerable area of idle land is located is solicited toward making such lands available for Soldier Settlement. All purchases are for spot cash.

The Soldier Settlement Act prohibits the payment of any commission. The vendor is expected to quote his lowest cash price.

As no appraisal reports can be secured after freeze-up, owners will please reply promptly in order to assist the Board in making immediate inspections.

Address all communications regarding the above to

**SOLDIER SETTLEMENT BOARD  
Land Listing Department  
ENDERTON BLDG.  
WINNIPEG**

# How En-ar-co Solves the Motor Lubrication Problem



## En-ar-co National Motor Oil

Made by "Graduate Workmen"  
Our Scientific Refining processes eliminate even the possibility of carrying residue or coke-like substances in this oil. In the making it first comes off in the form of a distillate or vapor. This is condensed into a liquid and then further refined and filtered. Thus we produce an oil that is ALL OIL—oil that assures a motor's greatest strength and power. Order it by the barrel or half-barrel—the economical way.



## En-ar-co National Light Oil

Buy Your Winter Supply Now

A bright, clear light—without charred wick or sooty chimney—is assured when you use this oil in lamps or lanterns or oil stoves. Buy it by the barrel.

This "better oil" insures uniform heat with no smoke, no smell. It does not leave a carbon deposit to clog wick and burner.

Also best for incubators and brooders and the most economical tractor fuel.



## En-ar-co Motor Grease

For Every Grease Point

It is no longer necessary to have a special grease for compression cups, another kind for differentials, and still another grease for transmissions.

En-ar-co Motor Grease will give perfect lubrication for all purposes, all around the motor car or tractor.

Our refining experience of half a century has made this grease possible. Buy a supply now.



## En-ar-co White Rose Gasoline

The Powerful Motor Fuel

You can't afford to use ordinary gasoline. You want "White Rose" It has made a sensational record for dependability, power and extra energy. It gives your motor "dash" and "pep" and results in a greater satisfaction.



## En-ar-co Black Beauty Axle Grease

Takes the "squeak" out of the old wagon—making it run easier and last longer.

All the rich lubricating qualities of crude oil are retained in its manufacture, insuring a smooth, friction-free, wear-resisting axle. No compounds to clog and gum. Packed in useful galvanized pails.

## Scientifically Refined by Graduate Workmen

Regardless of the motor you use, whether automobile, tractor, motor boat or engine, En-ar-co National Motor Oil produces the best results.

This Scientifically Refined oil protects the moving parts with a soft, velvety film that guards against friction, and permits the motor to develop its greatest power and speed. En-ar-co quality never varies.

Here is the reason why:

## Each Man An Expert

In En-ar-co National Motor Oil, and all other En-ar-co products you get not only the results of the finest laboratory formulas and the most advanced mechanical methods, but also the work of the most highly skilled refiners.

Each En-ar-co Refiner is carefully trained. Each must pass through a rigid primary course of refining instruction. Then through grade after grade of En-ar-co training. Each grade must be successfully completed before the workman graduates. And not until then is he entrusted with responsible tasks.

Thus have we developed Scientific Refining, and thus have we eliminated all quality fluctuations and produced the perfect lubricant.

## Put En-ar-co to the Test

We want you to prove our claims. Try En-ar-co and note the difference in your motor.

If your local dealer cannot supply you with En-ar-co, mail your order direct to us.

## Canadian Oil Companies, Limited

1355 Excelsior Life Bldg.  
Toronto, Ontario



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.....automobile or tractor and enclose two 3-cent stamps. Send me Handy Oil Can FREE. Please give nearest shipping point in this province and quote prices on the items I have marked. I will be in the market about

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NOTE: This can will not be sent unless you give make of your auto or tractor.





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# MAX Stock Trough and Heater

Give your stock plenty of warm water and they will thrive.



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Max Stock Troughs and Heaters are made to suit Western Canadian conditions, and have been proved by years of service, the troughs are equipped with clips to securely fasten heater down. The heater has self-dumping grate.

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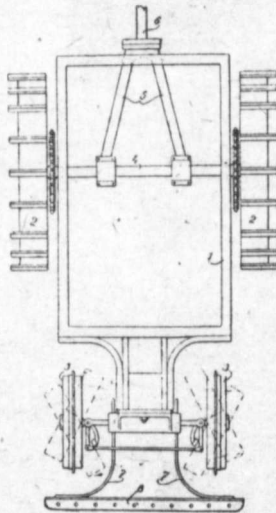
## SIMULTANEOUS HARVESTING AND BREAKING UP OF THE STUBBLE WITH A TRACTOR

THE following interesting developments in traction-cultivation are taken from "Le Genie Rural," published in Paris (France). Recent information from civil as well as military sources is to the effect that great strides are being made in France in farm mechanics, and that especially in farm tractors something of a sensational nature may be expected shortly. Necessity knows no law, and necessity is the "Mother of Invention." Needs must lie hard on France in these days.

To hitch a 13-time Massey-Harris cultivator to a binder towed by an Avery tractor, M. Grateaut, of Epemont (Eure-et-Loire), France, uses an iron bar 6 feet 6 inches long bolted on to the shaft of the binder and clamped behind on the binder frame. On the steering device of the cultivator are bolted two flat irons joined by a bolt to the end of the bar projecting from behind the binder. This device is to leave steering free in a vertical direction but to render it rigid horizontally, so as to allow the binder and cultivator to back if required.

M. L. Danchaud, of Levit (Cher), has designed a device similar to that just described and which is also intended to carry out two operations at once. Although less simple than the former, as it requires a special tractor, M. Danchaud's device is said to constitute a great progress in mechanical traction. Instead of towing the binder by a tractor and hitching a stubble breaker behind the binder, the new arrangement makes it possible to attach the binder in front

of the tractor and the stubble breaker behind. Thus the tractor pushes one machine and pulls the other. One man can drive the tractor and supervise the working of two machines. Moreover, as the binder is in front of the tractor, it can cut a greater width as there is no risk that the tractor will pass over the uncut crop.



Other machines that work suitably together can be used to replace the binder and stubble breaker (hay mower and hay maker, or one binder in front and another behind the tractor).

In addition the device is well suited to the direct driving of the working parts of agricultural machines in general and specially of binders and reapers by the tractor engine. The appended design gives a plan of the invention. The apparatus includes a frame on which is mounted the engine with the gear, drive and controls.

The frame is mounted on two driving wheels, 2 in front and 2 steering wheels 3 in the rear. In front of the frame two arms 5 are mounted on the axle 4 and carry a shaft 6 for connecting with the machine to be driven or partially or totally supported.

In the rear of the frame, the arched pieces 7 of the steering gear are mounted. These pieces have their end joined to a draw-bar 8 for such agricultural machines as have to be drawn by the tractor.

## PRACTICAL LUBRICATION

Points to be Remembered to Reduce Repair Costs

Why We Lubricate

WITHOUT some form of lubrication machinery would be useless, and in the internal combustion engine especially, progress depends on its efficiency. The petrol engine develops its power at a high speed, generating considerable heat, which is taken into account by the manufacturers when designing their lubrication systems. The purpose of lubricant is to keep the surfaces of any bearings from actually coming into contact, i.e., one metal on another, at the same time to provide a suitable medium on which they can move without friction. As there is always pressure of one surface against the other when they are at work, it is necessary to replace the lubricant as it is gradually forced away. The regularity and effectiveness with which this is done determine the life of the bearings, and that means the life of the vehicle.

Although most modern lubrication systems are as near theoretically perfect as it is possible to get them, their efficiency relies to a great extent on the treatment they receive at the hands of those who handle them. As in most things, there is a right and wrong way of oiling an engine or greasing a shackle bolt. Theory is ably supplied by the books of instructions or the lubrication charts, as the case may be, but care and commonsense are the qualities that make for success in practice.

It is not generally realized that incorrect or insufficient lubrication can considerably reduce the final power obtained at the road wheels; as an example may be mentioned excessively thin oil in the engine, causing loss of compression, or too thick grease in the gear box or back axle. Every time a vehicle is shifted out of its level course by holes or bumps in the road, power is absorbed in the process beyond that required for propelling it in a straight line; thus, by keeping the spring leaves

(Continued on Page 51)

# A Business Proposition for Farmers

**WE** want you to size up Delco-Light as you would a new farm hand before you hired him.

Will Delco-Light do a good day's work on the farm every day? Will it cost much to keep? Will it earn money for you? Will you get along pleasantly with it.

Over 75,000 Delco-Light users have answered these questions for themselves and for you.

Delco-Light gives them all the electric light and power they need.

## As a result—

They do chores before daylight or after dark, because house and barns are well lighted.

They have stopped working small machines by hand—milking machine, churn, separator, grindstone, washing machine, fanning mill, water-pump. They have running water wherever it is needed. They no longer hamper themselves with a lamp or lantern while working. There are no lamps to clean and fill. The ironing is done by electricity.

All this means time saved for every member of the farm family. It means more time spent at money-making work. On some farms it means doing away with hired help.

And the money now spent for coal oil will operate Delco-Light. Four times as much light from a gallon of coal oil is the record of Delco-Light over oil lamps. A few cents a day for all the electric light and power you can use.

Where there is a boy on the farm, he looks after Delco-Light. A few minutes each week is all the attention it needs. Note these exclusive features of Delco-Light construction. They insure care-free, long-lasting service for you.

It is direct-connected. There are no belts to slip, break or be replaced.

It is self-cranking. Pressing down a lever starts the engine and it stops automatically when the batteries are charged.

It is air-cooled. There is no water to carry, to freeze, or to boil away.

There is only one place to put oil. There are no grease cups.

A simple mixing valve regulates the fuel supply. There is no complicated carburetor.

Ball and roller bearings cut down friction and increase efficiency.

Thick-plate batteries are long lasting. You can see that on every point Delco-Light is a good business proposition—that it pays for itself. It does a lot of work for you. It saves you time. It gives you time for money-making work. It costs little to operate. It is easy to look after.



BESIDE ALL THIS, Delco-Light gives you the wonderful comfort and pleasure of electric light in the home. Floods of clear, bright light at the pressing of a button. No matches; no danger. Lots of light. Pleasant evenings; happy mother and children. You can't know the untold benefits of electricity until you try it.

Delco-Light users know all these things. They have written us letters telling us. We quote from some of these letters. We have printed some of them in a little folder. Illustrated with photographs. We want you to get this book and read it. It will open your eyes to the possibilities for greater profit and greater comfort on the farm. Write your nearest distributor for a free copy.



(a) DELCO-LIGHT has made it possible for us to do without one man, whose wages and keep amounted to \$50.00—he would cost us more now.

By operating the above mentioned appliances Mrs. Peck has been so relieved from her ordinary household duties that she is able to spend a great deal of her time helping to care for the milk, and we are now able to do all of our own work, which has solved the hired help problem for us, and securing help nowadays is the farmers' greatest problem.

(b) Delco-Light saves us every day about one hour doing the chores around the farm—this would mean for my son and I about 730 hours a year at 30c. per hour, which is, figuring very low, about \$219.00 saved.

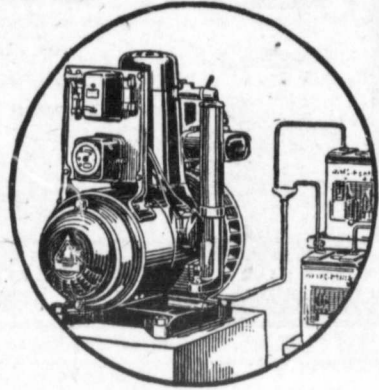
(c) The time and labor saved every week over the old way is as follows:

Cream Separator.....	6	hours
Washing Machine.....	5	"
Flat-iron.....	2	"
Pumping water.....	6	"
Vacuum Cleaner.....	4	"
Power Stand or Fan Mill and various things.....	2	"
Total.....	25	" per week

(d) I save about 2 hours a week on the washing, and 7 hours a week on separating. It saves one man about 4 hours to clip my team. On churning it saves my wife 3 hours a week. It saves about 30 minutes on grinding our sausage per hundred pounds.

(e) We figure that it has saved us in way of labor for pumping and milking not less than \$1,200.00 during the two years. The plant requires very little attention and only about \$2.00 per month for fuel. We could almost afford to buy a new one each year and still be ahead on labor and satisfaction, aside from the advantages of having the lights, of which we have 50 in the house and barns.

(f) I light my residence, a house of fourteen rooms and one of five, my garage, two barns and a workshop. I operate an automatic water pump, maintaining a pressure of 40 pounds for the entire water supply of the place, including hose for watering the garden. We have a 1/2-horse power Delco-Light Power Stand, which is used for churning and working the butter, turning the grindstone and running the



washing machine. I expect to attach it later to the cream separator.

(g) This plant is paying for itself in several different ways. The fuel saving alone amounts to about \$460.00 per year, as follows:

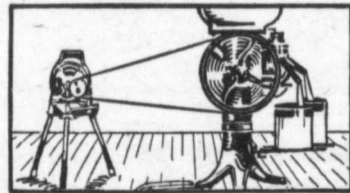
Where we formerly used 55 gallons of gasoline per week, at 25c. per gallon (\$13.75) to operate the milking machine and pump alone, we now use 35 gallons of kerosene per week at 14c. per gallon (\$4.90) which is a net saving of \$8.85 per week, or \$460.20 per year.

Also, in addition to this, we are lighting four houses, horse barn and cow barn and doing the washing and ironing.

Another instance of saving is that we save the time of one man (4 hours a day) handling lanterns alone in our cow barn. We figure this a saving of 30c. per hour, making \$1.20 per day, \$36.00 per month, or \$432.00 per year.

(h) "I consider my purchase of a Delco-Light plant one of the best improvements I have made on my farm." DUNCAN MARSHALL, Minister of Agriculture, Alberta, Canada.

(i) The plant has not given us a bit of trouble,



there have been no repairs to date and the operating cost has been less than \$2.00 per month.

(j) Any child can run it and it beats any of your coal-oil lamps for light and safety. Before acquiring a Delco-Light I could not rest good at night for fear of children lighting a match and thereby possibly setting fire to something. Now I sleep like a log because all that is necessary for the children to do is to press the button and the light is there, and a most excellent light at that. It is much cheaper than Coal-oil and no danger of upsetting a lamp.

BRUCE L. ROBINSON, Calgary, Alta.  
BREEN MOTOR CO., Winnipeg, Man.

The Domestic Engineering Co.  
Dayton, Ohio  
Makers of Delco-Light Products

# DELCO-LIGHT

The Complete Electric Light and Power Plant for Farms

# William Penn MOTOR OIL



A body for every make and type of motor car and tractor—  
**Extra Heavy, Heavy, Medium, Light, Cold Test**  
 made of Pennsylvania stocks—admittedly the best in the world—to specifications determined by years of experience catering to Western Canadian needs

Write our nearest office for chart showing which one of these oils you should use.

## Continental Oil Company LIMITED

WINNIPEG	BRANDON	REGINA	SASKATOON	CALGARY	CAMROSE
ST. BONIFACE		SWIFT CURRENT		LETHBRIDGE	

### "The Cost of Living"

It is a significant and gratifying fact that while the cost of everything else in the line of necessity has gone up—the price of one of the chief necessities of all—Life Insurance—has gone DOWN.

To those looking for the best available in Life Insurance, it is sufficient to point to the fact that for thirteen successive years the public have shown that they consider The Great-West Life Policies unequalled. For thirteen successive years The Great-West Life has written the largest Canadian Business of all the Canadian Companies.

Policies are inexpensive—liberal—profitable—arranged to cover all needs. Ask for personal information, stating age.

**The Great-West Life Assurance Company**

DEPT. "O"

HEAD OFFICE - WINNIPEG

Send us your name, address and date of birth and get a copy of the Farmers' Account Book—free on request. Your INCOME TAX can be accurately figured by the use of this book.

# MACDONALD'S

## PRINCE OF WALES PLUG CHEWING

*Western Canada's Favorite  
packed in convenient  
10lb. Caddies.*



**The Tobacco with a Heart.**

## Jammed Gear Change

*If the driver reported that, having engaged the lowest gear, he had experienced the greatest difficulty in shifting the lever back to neutral, what steps would you take to set matters right?*

WERE I placed in this predicament I should investigate the cause of the defect. There are several possible causes, and I will endeavor to explain them. In a vehicle which is fitted with a ball or roller clutch thrust race, and at the same time has no clutch stops fitted, the male portion of the clutch cone is left free, and I am doubtful if the defect could ever be produced. Assuming the same vehicle to be fitted with clutch stops, or a brake to the clutch cone, the trouble can be produced, for just as the pressure of the engine when driving will keep the teeth of the gears bearing so hard on one another that the speeds cannot be changed, so when the engine is declutched and the momentum of the car driving the gears, the clutch brake many act similarly to make driving and driven teeth press hard against each other. Particularly is this the case if the clutch stop is allowed to become dry. Only if the load could be released off the gear tooth, could the lever be returned to the neutral position. To take the load off the gear tooth the clutch must first be re-engaged and then depressed, but not sufficiently far for the clutch to come to contact the clutch stops. At the same time the gear lever should be brought back to the neutral position. It is surprising how tightly a gear will jam if the clutch stops which contact the clutch cone are allowed to become dry. This difficulty can be entirely obviated by attention. I find it necessary for the clutch

stops to be adjusted 5-16 in. to  $\frac{3}{8}$  in. from the clutch cone face. The spring of these clutch stops must not allow for too positive an action; also a little grease should be placed between the clutch stop face or on the face of the clutch cone, so that, when declutching takes place to engage the gear, the cone is brought to gradual stop. The idea of the clutch stop is to check the clutch cone from spinning when gear changing.

The same effect may be produced by using bronze blocks to operate the clutch. These, if allowed to become dry, will act as a positive brake to the clutch cone. There are other faults, which sometimes occur through bad or rough usage of the clutch, as, for instance, a twisted spline or square shaft on which the sliding gear works. Ever such a slight twist to this shaft will prevent a well fitting sliding gear working along it. The remedy for this, in most cases, is a new shaft. There is yet another way this defect will manifest itself. Assuming you are hill-climbing on first gear and the vehicle is stopped in the middle of the hill with the side brakes, the driver declutches fully to attempt to bring the gear lever to the neutral position. He will probably find it very difficult; in some cases impossible. The way to overcome this difficulty is to re-engage the clutch momentarily and move the vehicle a few inches ahead. Then declutch, and apply side brakes again, but on this occasion do not declutch far enough to contact clutch stops—leave the clutch cone free so that there is



JAMMED!

"But what happens if your engine stops in the air—What happens? Can't you get down?"  
 "That's just what happens, mum. There's two Huns up over in France now with their engines stopped. They can't get down; so they're starving to death."

movement in it; but if by depressing the pedal too far you tie the clutch cone with the clutch brake, you may be sure of a recurrence of the difficulty if the clutch stops are too positive.

Another method in coming to neutral from first gear is sharply to re-engage and depress the clutch pedal, simultaneously withdrawing the gear lever to neutral, but if on a hill one must be very quick so as not to let the vehicle run backwards.—A.B.

**CLEAN AIR FOR THE CARBURETOR**

**T**HE need for some means of cleaning the air supply to the engines on motor vehicles of all kinds is rapidly being recognized. When you look under the hood of a passenger car or truck after a long trip on a dusty road and see the engine covered with dust you realize how much dust is going inside the engine through the carburetor. And on a tractor the conditions are very much worse, especially in sandy soils. On days when there is no wind, or very little, there is such a cloud of dust round a tractor that a

*SHEET METAL PIPE ANY SIZE DESIRED*



few yards away it is impossible to see the tractor or the disks or the driver.

In all published illustrations of the U. S. Army tractors showing the engines the air cleaner can be plainly seen.

The fine dust being sucked into the cylinders causes very rapid wear of the cylinders, pistons and rings and as it works down into the crank case it circulates with the oil and wears every moving part. Fully to cover this subject would fill a book. The writer has seen a piston ring which was used in a tractor motor in very sandy soil. In less than 100 hours of operation the ring was worn "paper thin" and one third of the circumference had disappeared. This shows that an air cleaner is a necessity.

But the dust entering the cylinders affects the operation of the engine in another way, which is to add to the carbon deposit on the cylinder heads and pistons. One manufacturer of tractors had analyses made of carbon taken from tractor engines working under widely different conditions.

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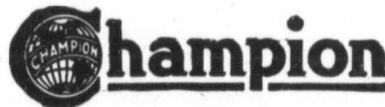


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The best possible reason why every plug replaced in your Ford should be a Champion "X" is contained in the Ford instruction book which says—"The make of plugs with which Ford engines are equipped when they leave the factory are best adapted to the requirements of our motor."



**Dependable Spark Plugs**

are exclusive factory equipment in Fords, Overlands, Maxwells, Studebakers, and over two hundred other makes of gasoline motors and engines, because Champions have justified every claim and every confidence by an unbroken record for dependability under every possible test in actual service.

There is a Champion that will maintain the efficiency of your Motor Car, Truck, Tractor, Farm Engine, Motor Cycle or Motor Boat.

*Sold where Motor Supplies are sold.*

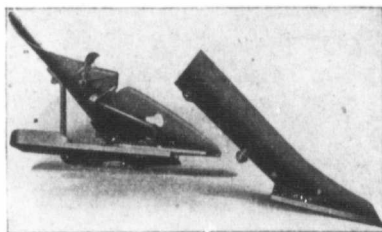
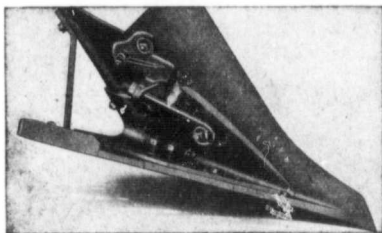
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of Canada Limited  
Windsor, Ontario.**



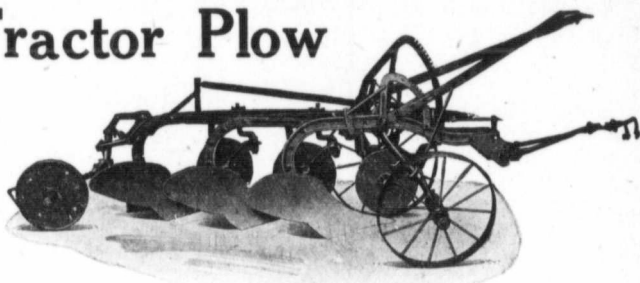
Champion "X"  
for Ford Cars  
A-15. 1/2 inch.  
Price 90c.

# The Hamilton Tractor Plow

*A Better Implement  
Does Not Exist*



**BEFORE AND AFTER.** The shares can be removed without the aid of a wrench. Unscrew the hand nut on the draw rod and kick the share off the plow. No time wasted—takes but a few minutes. Note the strong, heavy frog and the chilled heel on landside.



**T**HE HAMILTON TRACTOR PLOW scours under adverse conditions. It turns a smooth furrow and provides a compact seed bed, putting all trash in the bottom of the furrow. A wide range of close adjustments enables the operator to turn a furrow of the exact depth required. When opening the field, the front bottom can be adjusted to turn a furrow of any depth.

The quick-detachable-share arrangement is one of the special features of the Hamilton. It is shown and described below. Any man who knows plows will appreciate this feature to the full.

This is the power-lift plow—meaning that the tractor furnishes the power to lift the plow. A slight pull on the rope by the operator from his seat raises and lowers the bottoms—a very simple and easy operation. The lift is high with good clearance. Levers which are long and convenient are in easy reach of the operator and govern plowing depth.

The Hamilton Tractor Plow is substan-

tially built throughout. The beams are exceptionally heavy, of high grade carbon steel, rigidly fastened together by heavy braces. Two or three-bottom sizes. The hitch has good range of adjustment up and down and sideways. Careful protection is made against dust getting in to wear the bearings. Wooden break pin minimizes danger of damage to plow.

Owners of Hamilton Tractor Plows have for years known plowing satisfaction. Join these owners. No better implement exists than the Hamilton tractor plow. Write the nearest address below for complete information.

## INTERNATIONAL HARVESTER COMPANY OF CANADA LTD.

WESTERN BRANCHES—BRANDON, WINNIPEG, MAN., CALGARY, EDMONTON, LETHBRIDGE, ALTA., ESTEVAN, N. BATTLEFORD, REGINA, SASKATOON, YORKTON, SASK.  
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### HIGH-CLASS "BRITISH" MACHINERY

## The "Marshall" Oil Tractor

Built like a Battleship  
Runs like a Watch



#### The Dreadnaught of the Prairies

This Tractor is made in 2 sizes, 16 H.P. Drawbar, giving off 30-35 Brake H.P. on the pulley; 32 H.P. Draw-bar, giving off 60-70 Brake H.P. on the pulley. They are economical, durable and reliable. Guaranteed of finest materials and best workmanship. They need few repairs.

**IF YOU WANT SATISFACTION, BUY OUR TRACTOR AND THAT WILL STAND UP AND GIVE YOU MANY YEARS OF SERVICE**

Farmers are seriously warned not to be misled by the light, short-lived, inferior cheap (so-called) Tractor; it will not stand up, and only causes trouble, vexation and loss.

**SEND FOR CATALOGUE**  
SEMI-DIESEL, TWO CYCLE, OIL ENGINES, STATIONARY AND PORTABLE

suitable for General Farm Work, Threshing, Electric Lighting, Contractors, and General Commercial use.

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These showed that so-called carbon is really a mixture of iron oxide—from wear of the cylinders and pistons—oil which was not carbonized, real carbon, and road dust. The percentage of iron oxide and of road dust varied, being greater from engines operating on light sandy soils. The dust in many samples formed over half of the carbon.

It is evident from these facts that no adjustment of the mixture in the carburetor or quality of the lubricating oil can prevent the formation of carbon under these conditions.

And too, it is easy to see that the oxygen system of "burning out" carbon cannot remove entirely a deposit of "carbon" formed of dust which cannot be burned.

Many different types of air cleaners are in use on tractors, and several are for sale for attaching to tractors not equipped with cleaners at the factory.

The accompanying illustration shows the design of an air cleaner which can be easily made by any tractor owner. Though it will not clean the air so thoroughly as the more elaborate "built-in" cleaners, especially those of the water type, it will give good results on tractors already in use. In preventing carbon deposits and wear of the en-

gine it will repay many fold the trouble of making it.

The sheet-metal pipe has holes made in it about one inch in diameter, as close together as possible and still leave metal enough to hold together. This is covered with fine-mesh screen wire soldered at the ends and along the joint. The screen is covered with a knitted ribbed-stocking "top." The "tops" are made in an endless string and cut into lengths and the feet knitted on. A top can be cut out of an old stocking, but a piece which has not been dyed is much better. Pieces of any length desired can be bought from hosiery mills.

The top is pushed all on one end and just enough pulled down to cover the screen and is held in place by two rubber bands. As it becomes dirty another part is pulled over the screen. The whole piece can be easily washed or most of the dirt can be removed by whipping it in the air or against a post.—James W. Cottrell.

Agent—"Just a moment, Mr. Peck. Have a cigar? I'd like to interest you in a motor car."

"No, thanks! Wife doesn't allow me to smoke, and it was a motor car we eloped in."

**"Quality first"  
for 35 Years**

**Galvanized  
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**Lightning-proof, Fire-proof,  
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## Soldering Iron and Steel

WHEN iron, steel and galvanized steel are to be soldered, the operation must be performed somewhat differently than when bright tin, brass, copper and most other "soft" metals except aluminum are to be soldered. The farmer had best not trouble with aluminum. The process of soldering it is such a hard one as to be almost beyond his skill. But the soldering of iron and steel and galvanized iron and steel may be accomplished without difficulty of any kind with the same tools



that were used for soldering tin. A different flux is necessary for soldering the metals mentioned. Rosin alone will not answer, though rosin may be used to advantage with the flux required for this work. For soldering iron and steel, some zinc hydrochloric will be required. This substance is variously known as muriate of zinc, cut acid killed spirits of salt, and so forth.

To prepare this solution, procure some muriatic—hydrochloric—acid, place it in a suitable vessel and drop in all the zinc the acid will dissolve.

Plumbers frequently use little lead vessels for holding the "oxide" and raw "acid," both of which are necessary when soldering galvanized steel or iron. The little lead vessels may easily be made, as shown in Fig. 1. Two pieces of lead pipe an inch long or more may be sawed from pipe two inches in diameter. Such pieces are shown at A and B, with lead bottoms C soldered in place. These little lead cups may be marked by scratching on them with an awl or a knife the words "Oxide" and "Acid," as shown. The "oxide" is the acid



in which zinc has been dissolved. The "acid" is plain; raw muriatic or, as it should be called, hydrochloric acid.

For applying the liquids on the metals to be soldered, plumbers frequently use little brushes, as shown at D, some bristles being caught between the sides or edges of a strip of turned-over

tin. Or a little wooden paddle may be used instead of a brush. Such a tool is shown at E. It may be whittled from a bit of soft wood—white pine is best. Sheet-lead covers should be provided for each vessel to keep out dust and to prevent evaporation when the fluids are not in use. These covers are plain bits of sheet lead, one of which is shown at F.

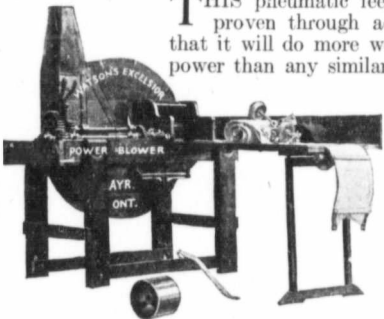
The oxide dish A is very handy when using a copper continuously. A quick dip of the soldering bit into the oxide cup will restore the solder coating on the bit in a most remarkable manner. The same thing can be done with the can of soldering paste with which the would-be solderer may have provided himself.

To solder pieces of iron or steel together, say as shown in Fig. 2, where a hang-up loop I is to be soldered to a bit of hoe blade G, cut off the required length of "farmer's friend"—hay binding wire—and brighten the ends which are to be soldered. Also brighten the portion of the steel plate to which the loop is to be attached. Make a good job of the brightening. No half-way brightening will answer. The surfaces must be clean.



Brush over the brightened surfaces with liquid from the oxide dish, then apply the heated soldering bit, with as much solder as the bit will take up. Wire I may be laid upon the can cover during the tinning operation—the same can cover that is used for coating the copper bit with solder. Rub the wire with the hot copper, right down into the melted solder on the can cover, using plenty of oxide, and almost immediately the clean wire will be found well coated with solder, as shown at J J.

Next treat the plate G with oxide and solder and coat round where the loop is to be attached, as shown at H. A little rosin added to the oxide on the plate will cause the solder to flow well over the plate. Next place loop I in position. Hold it in position with the end of a file or with a screw driver and apply the heated, solder-charged copper close, beside one leg of the wire, lengthwise to it, and the solder will flow all along the wire and over it, if solder enough be used,



THIS pneumatic feed cutter has proven through actual service that it will do more work with less power than any similar machine. The special design, perfected in the highest quality materials, makes operation easy and economical.

### WATSON'S POWER BLOWER

This machine provides the most convenient and economical method of handling dry feeds. The mouth is 13 inches, making it possible to feed whole sheaves without gutting the bands. It will cut and elevate (as high as 40 ft.) 6 tons per hour. The "Excelsior" Junior Blower Feed Cutter will be found equally as useful where a smaller capacity will serve. The "Excelsior" Junior Hand Cutter will fill every requirement where a small machine is needed.

Write to-day for complete information on the feed cutters, or any of the following lines;

Slighs	Pulverizers	Doubletrees and Neckyokes
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### Best ANTI-FRICTION BABBITTS ON THE MARKET

With forty years' experience in manufacturing alloys for all classes of machinery, the HOYT METAL CO. has evolved two alloys which are unsurpassed by anything of the kind now in use.

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

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Less than 25 lbs. .... \$1.25 per lb.	Less than 30 lbs. .... .40 per lb.
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## Live Stock will Establish Our Future

Mr. H. S. Arkell, Canadian Live Stock Commissioner, before the Swine Breeders' Association at Ottawa, said: "Our future, financially and nationally, depends to a large extent upon development of our live stock industry. It is live stock that is going to establish our future."

This Bank is always ready to consider the needs of the farming community—and is prepared to loan to responsible farmers for buying and carrying cattle, etc.

## UNION BANK OF CANADA

THE PIONEER BANK OF WESTERN CANADA

365A

# The Farmer is Looking for the man with the RED RIVER SPECIAL

**T**HIS is the thresher that threshes his grain clean. This is the one that saves enough of his grain and time to pay his thresh bill. There is no guess work about this. The Red River Special is the thresher with the famous "Man Behind the Gun."

The Red Special Beats out the Grain instead of waiting for it to fall out.

The farmer doesn't want you to experiment at his expense with some unknown machine, or some machine that doesn't have the Men Behind the Gun. When he asks you what kind of a rig you are running, tell him "Red River Special." If you can't tell him this, go and get one so you can.

With a Red River Special Separator you will please more customers and get in a longer, more profitable run.

Or, if you want a thresher for individual use, learn about our Junior Red River Special, the **little** machine that does **big** work.

WRITE FOR CATALOGUE

## NICHOLS & SHEPARD COMPANY

(In Continuous Business Since 1848)

Builders Exclusively of Red River Special Threshers, Wind Stackers, Feeders, Steam and Oil-Gas Traction Engines

Battle Creek - Michigan

Branch Houses:—REGINA, Saskatchewan

H. P. NORTON COMPANY, CALGARY, Alberta

WINNIPEG, Manitoba

presenting the appearance shown at K.

With the copper properly heated and the surfaces well cleaned, there will scarcely be a line or a lump to be seen in the solder job K; but if any of these things be neglected, then you simply can't make a good clean job of it, try as hard as you may. Thus far the raw acid has not been used. Only when galvanized metal is to be soldered will the raw acid be necessary. Such a job may come up in the mending of a water tank or the gasoline tank of an automobile. Fig. 3 shows a job very likely to come along—the soldering of an "ear" to a galvanized water bucket.

The ear L may be new, to replace a broken one. It has probably been cut from a stout bit of galvanized steel, shaped properly, and is to be fastened to bucket N, as shown. The beginner would most likely lay the ear in position and proceed to waste good time and solder in an attempt to fasten it in place. But we will not start that way. First, the ear must be well riveted by two rivets, one of which is shown at O, through the body of the ear N.

Riveting is absolutely necessary, for the reason that the soldering of galvanized metals can never be depended upon for

strength. It will do for securing tightness, but the parts must always be riveted or locked together to obtain the necessary holding strength. For this purpose, the two rivets are used in ear L N.

After the ear has been well riveted, apply the raw acid liberally. This brightens the parts so that no scrapping is necessary. It also removes any rust or oxide from the ungalvanized rivets and edges of the ear and also coats the part with zinc oxide, formed by the action of the raw acid upon the zinc coating of the galvanized metal. Then solder is applied over and round the ear L, and flows under and round it, leaving a very smooth solder surface, as shown at Q. The top of the rivet is also treated and becomes smooth and solder-covered, as shown at R. Later the rivet O and end of ear N are treated in like manner. Thus the acid is changed into "oxide" during the operation and coats the steel with a film of zinc so the solder can adhere to it. The copper should be somewhat hotter for soldering galvanized metal than for use on tin.

Fig. 4 shows how a large hole either in tin or galvanized metal may be closed with solder without using a patch. The hole S

was made by a pitch-fork or some object which turned inward the edges of the plate. At T the edges are shown hammered back flat and well brightened as far back as U. If tin, rosin and "oxide" are used and solder is piled round the hole, as shown at V. If the metal be galvanized, then raw acid is used.

To close the hole, as shown at X, the soldering bit W is heated only barely hot enough to melt the solder shown at V; then the tool is applied, as shown at W, and moved sidewise with a quick, even movement. The solder is "pulled" right over the hole, closing it completely. But this cannot be done if the copper be either too hot or too cold. For this and other kinds of heavy work, a form of bit known as the "hatchet copper" is preferable. This tool is also a vital necessity for soldering lead pipe and long seams in heavy metal. It holds its heat better than does the pointed copper.

The keynote of success in all soldering operations is: "Keep the soldering bit well tinned"—to which may well be added—"and the work well cleaned!"—James F. Hobart.

### Food for Thought

It was washing-day, and John had been kept from school to look after the baby. Mother sent them into the garden to play, but it was not long before cries disturbed her.

"John, what is the matter with baby now?" she inquired from her wash-tub.

"I don't know what to do with him, mother," replied John. "He's dug a hole and wants to bring it into the house."



"Can I 'ave the arfternoon off to see a bloke abaht a job fer my missis!"  
"You'll be back in the morning, I suppose!"  
"Yus—if she don't get it."

### THE STORY OF BINDER TWINE

By Theodore Ruete

**T**HERE can be few studies in the world more fascinating than that of Economics—of watching how events in one part of the world affect and sway those in another.

It broadens the outlook, teaches us to regard the world as a whole, of which every part is more or less dependent upon every other.

Nowadays there can scarcely be any field of industry which is not influenced in some degree by what is going on elsewhere, even though the dweller in some remote valley should imagine himself entirely independent—"the world forgetting, by the world forgot."

If such a one would but take a moment's thought he would surely begin to realize that if such a state of affairs ever existed it certainly does so no longer, and that there is no department of his life that remains unaffected by the occurrences in the outside world.

The farmer, too, who is perhaps sometimes too prone to believe he is being exploited by the manufacturer, would get some glimmering of the multitude of possibilities, contingencies and happenings that have to be taken into account by those who furnish him with the tools of his trade; the risks they have constantly to take of rising or falling markets, labor troubles, money put out without hope of return for long periods, and such like.

True, the farmer himself is not free from similar anxieties—he may see his labor go for naught by reason of the weather or adverse prices, over which he has no control; but a wider outlook should make for a wider sympathy with the multitudinous difficulties with which all men have to contend.

If it had no other result it would at least provide him with a perennial source of wonder, not to say interest, to note how every corner of the globe contributes its share towards his ultimate well-being, or otherwise.

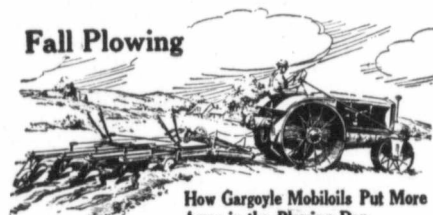
Of no one product is this perhaps so true as of that small item to which he has perhaps never given a thought—binder twine.

Never given a thought, did I say? Stay, I was wrong; for assuredly he must often have railed at what he called the iniquitous prices charged him for the same.

And yet there is perhaps no manufactured article that the farmer uses that has so much anxiety and uncertainty attached to it as this one.

For what, after all, is binder twine, and whence does it come?

## Fall Plowing



How Gargoyle Mobiloils Put More Acres in the Plowing Day.

Every acre plowed now means that much bigger crops next year.

How will Gargoyle Mobiloils help?

By keeping your tractor in the field and out of the repair shop.

Tractors often go wrong at critical moments. Expert evidence proves that the great majority of cases faulty lubrication is the cause.

How can you be sure that you are using the correct oil for your tractor?

By following the Chart of Recommendations shown in part at the right. This Chart is compiled by a Board of Automotive Engineers and represents their professional advice on correct tractor lubrication based on technical knowledge of tractors and actual

tests in the field under service conditions.

It enables you to know the correct lubricant for your make of tractor. This ensures:

1. Greatest lubricating efficiency under the high heat of service.

2. Oil of the correct body to suit the lubricating requirements of your engine.

3. An oil film which will separate the friction surfaces and prevent the escape of gases past the piston rings during the compression and power strokes.

Gargoyle Mobiloils almost invariably show actual oil savings of from 30% to 80% and fuel savings from 10% to 30%.

Gargoyle Mobiloils are sold in wood half-barrels and barrels, and 1 and 4-gallon sealed cans.



#### FOR PASSENGER CARS

The passenger car has entered the farmer's life as a business as well as a pleasure vehicle. Its lubrication is as important as the lubrication of your tractor.

Write for booklet "Correct Lubrication," containing complete Gargoyle Mobiloils Chart of Recommendations for all Automotive equipment. There is also a complete discussion of automobile problems and troubles.

### IMPERIAL OIL LIMITED

Manufacturers and Marketers of Polarine Motor Oils and Greases  
Marketers of Gargoyle Mobiloils in Canada

BRANCHES THROUGHOUT CANADA

Every farmer knows that binder twine can be divided into two great classes, Manila and Sisal; perhaps he would add two others of his own—good twine and bad twine—but let that pass for the moment.

Now these are not two names for the same thing; they are totally different products, obtained from totally different plants at opposite ends of the earth.

Manila, or, as it is called in its country of origin, "abaca," is the fibre contained in the outermost layer of the bark of a species of banana tree that will only grow in the Island of Manila in the Philippines; and sisal, known as "henequen," in Yucatan, in Mexico, its original home, is the threads in the three- to four-foot-thick, fleshy leaves of the Agave Rigidia, variety Sisalana. In an effort to increase the quantity of

#### CORRECT TRACTOR LUBRICATION

Explanation:—The four grades of Gargoyle Mobiloils for tractor lubrication, purified to remove free carbon, are:  
Gargoyle Mobiloil "A"  
Gargoyle Mobiloil "B"  
Gargoyle Mobiloil Arctic  
In the Chart below, the letter opposite the tractor indicates the grade of Gargoyle Mobiloil that should be used. For example, A means Gargoyle Mobiloil "A," Arc means Gargoyle Mobiloil Arctic, etc.

TRACTORS	1924	1925	1926	1927	1928	1929
	Water	Water	Water	Water	Water	Water
Albion-Dover (Square Turb)	BB	A	BB	A	BB	A
Allis-Chalmers	BB	A	BB	A	BB	A
Allis-Chalmers (General Purpose)	BB	A	BB	A	BB	A
All Work	BB	A	BB	A	BB	A
Applian	BB	A	BB	A	BB	A
Autman-Taylor	BB	A	BB	A	BB	A
Case	BB	A	BB	A	BB	A
(18-30)	BB	A	BB	A	BB	A
(25-45)	BB	A	BB	A	BB	A
(115-21)	BB	A	BB	A	BB	A
Avoy	BB	A	BB	A	BB	A
(10-10 H P)	BB	A	BB	A	BB	A
(Louisville)	BB	A	BB	A	BB	A
Bean Seed Mtr	BB	A	BB	A	BB	A
Bean Truck-Pull	BB	A	BB	A	BB	A
Big Boy	BB	A	BB	A	BB	A
Big Boy (Ohio)	BB	A	BB	A	BB	A
Case	BB	A	BB	A	BB	A
(9-18)	BB	A	BB	A	BB	A
(10-20)	BB	A	BB	A	BB	A
(12-20)	BB	A	BB	A	BB	A
(20-40)	BB	A	BB	A	BB	A
Champion	BB	A	BB	A	BB	A
Columbia	BB	A	BB	A	BB	A
Columbia-Swiss	BB	A	BB	A	BB	A
C. O. D.	BB	A	BB	A	BB	A
Crigo	BB	A	BB	A	BB	A
Cummins-Crip	BB	A	BB	A	BB	A
Emerson-Stratton (BB-16)	BB	A	BB	A	BB	A
(25)	BB	A	BB	A	BB	A
(Big Four)	BB	A	BB	A	BB	A
(Gleason)	BB	A	BB	A	BB	A
Flour City	BB	A	BB	A	BB	A
(Heavy Duty)	BB	A	BB	A	BB	A
Fordson	BB	A	BB	A	BB	A
Geo Pull (Ramsey Co.)	BB	A	BB	A	BB	A
Geo Pull	BB	A	BB	A	BB	A
Happy Farmer	BB	A	BB	A	BB	A
(Model B)	BB	A	BB	A	BB	A
Hart Parr	BB	A	BB	A	BB	A
Holzer	BB	A	BB	A	BB	A
Houston	BB	A	BB	A	BB	A
Hull	BB	A	BB	A	BB	A
Holt Caterpillar	BB	A	BB	A	BB	A
(Model 45)	BB	A	BB	A	BB	A
(Model 15)	BB	A	BB	A	BB	A
Illinois	BB	A	BB	A	BB	A
Indochina	BB	A	BB	A	BB	A
K. C. Prairie Dog	BB	A	BB	A	BB	A
Kinross	BB	A	BB	A	BB	A
La Crosse	BB	A	BB	A	BB	A
Liberty	BB	A	BB	A	BB	A
Lightfoot	BB	A	BB	A	BB	A
Minnesota	BB	A	BB	A	BB	A
Mogal (I. H. Co.)	BB	A	BB	A	BB	A
(9-18) (I. H. Co.)	BB	A	BB	A	BB	A
Moline Universal	BB	A	BB	A	BB	A
National	BB	A	BB	A	BB	A
Neverslip	BB	A	BB	A	BB	A
(20-12)	BB	A	BB	A	BB	A
(30-12, 10-4)	BB	A	BB	A	BB	A
Newage	BB	A	BB	A	BB	A
Nihon	BB	A	BB	A	BB	A
Oil Pull (14-20, 10-30) (Ramsey Co.)	BB	A	BB	A	BB	A
(20-40) (Ramsey Co.)	BB	A	BB	A	BB	A
(12-20, 10-30) (Ramsey Co.)	BB	A	BB	A	BB	A
(Ramsey Co.)	BB	A	BB	A	BB	A
Parrett	BB	A	BB	A	BB	A
Phoenix	BB	A	BB	A	BB	A
Pow Boy	BB	A	BB	A	BB	A
Pow Man	BB	A	BB	A	BB	A
Pow Hammer	BB	A	BB	A	BB	A
Royce	BB	A	BB	A	BB	A
Royce	BB	A	BB	A	BB	A
(9-18)	BB	A	BB	A	BB	A
Ruffell	BB	A	BB	A	BB	A
(Giant)	BB	A	BB	A	BB	A
Sandhill	BB	A	BB	A	BB	A
Titan (I. H. Co.)	BB	A	BB	A	BB	A
Tormentor	BB	A	BB	A	BB	A
Turkey	BB	A	BB	A	BB	A
Trundlar	BB	A	BB	A	BB	A
True City	BB	A	BB	A	BB	A
(Model 15)	BB	A	BB	A	BB	A
(Model 15)	BB	A	BB	A	BB	A
(Model 12-30)	BB	A	BB	A	BB	A
Valley	BB	A	BB	A	BB	A
Walla Cub (Junior)	BB	A	BB	A	BB	A
Waterloo Boy	BB	A	BB	A	BB	A
Whitney	BB	A	BB	A	BB	A
Wisconsin	BB	A	BB	A	BB	A

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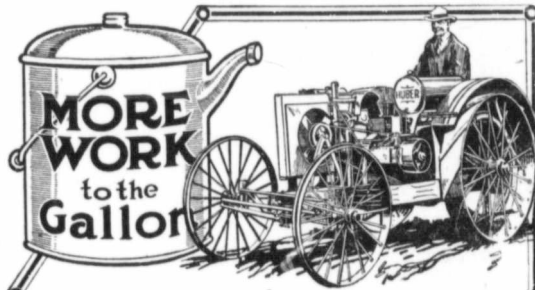
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**PLEWES LIMITED (Distributors) WINNIPEG**

On sale at your local hardware store.



**H**ERE is the tractor of utmost economy, the tractor that gets most from every gallon of fuel because the direct drive from motor to both rear axle and belt pulley saves power.

**THE HUBER Light Four**

is the right sized tractor for every sized farm. It is powerful enough to pull three 14-inch bottoms and turn an acre an hour, and light enough to work on plowed ground without packing it down.

Thousands of Huber Light Fours are in successful use. It is the tried and proved tractor. Huber owners are Huber boosters. For 40 years Huber has built steam tractors; and for 20 years gas tractors. The Huber Light Four is the best tractor Huber ever built.

Weight 5,000 pounds; pulls three 14" bottom plows; 18 h. p. delivered to the drawbar; 25 h. p. at the belt; Waukegan four-cylinder motor; Perflex Radiator; Hyatt Roller Bearings; burns gasoline, kerosene or distillate; center draft; two speeds, 2 1/2 and 4 miles per hour.

It plows, harrows, drills, pulls a binder—does every type of heavy field and belt work economically. So simple a boy can run it, and anyone who knows an automobile can keep it in repair.

Every one interested in tractors should read the "Tractor in the Making" a reprint in booklet form. Tells vitally interesting facts about tractors. It is free for the asking. Also ask for literature on Huber Junior Thresher. The Huber Mfg. Co., Marion, O., U. S. A.

**BARKLEY TRACTOR & SEPARATOR CO., Edmonton, Alberta**

**THE HUBER MFG. COMPANY BRANDON, MANITOBA**

Some territory still open for line dealers

so much-needed a thing, and to break the pernicious monopoly arising from a thing being only obtainable, from one place, sisal plantations have been started in other parts of the globe, notably Java, in the Dutch East Indies, and in British and the late German East Africa.

These, however, have not yet become sufficiently extensive, though yielding splendid fibre to affect the world's supply; it is like anywhere else trying to raise cotton in competition with the Southern States of America, Mexican sisal, like American cotton, each in their own line, still remain the spinner's standby—his daily bread, which he must have, or go out of business.

As to the Manila banana, all efforts to propagate it elsewhere have so far proved failures; it either does not grow, or else the fibre it yields, for some unknown reason, remains inferior.

Now, naturally, the yield of fibre from each plant, even though relatively large, is but small, but the demand for it is immense. Enormous estates, employing many laborers, are therefore required to obtain it; this, again, implying larger amounts of capital for their financing than any private individual possessés, if a production on a scale commensurate with the world's requirements of these articles—and nothing else will do—is to be achieved.

This industry has therefore largely fallen into the hands of banks, which combine with the governments of the respective countries of production to boost and maintain the price of the raw material.

Both the public and the manufacturers are agreed in this, that the prices of both manila and sisal are entirely too high, but these same high prices—which have to be paid, or go without twine, and we cannot do that—have caused manufacturers to buy very cautiously. For the same reason production has continued apace, so that now tremendous stocks have accumulated in Mexico, New Orleans, the New England States, Manila, Great Britain and elsewhere.

And yet manufacturers' stocks are large, too, because they are forced to buy ahead of requirements, for they never can tell but what an exceptionally heavy crop may find them without a sufficiency of fibre and perhaps be forced to buy in a still dearer market. And all this time their money is tied up, and a sudden slump may break them. No—certainly I should not like to be a twine manufacturer.

In New Zealand there grows a fibre, excellent for binder twine, but different from, though similar,

to sisal; and the manufacturers, twisting and squirming to get from under the Mexican monopoly, largely buy it, especially for mixing with Manila. They also buy East African and Javanese sisal, which, not being monopolies, come cheaper than Mexican sisal; the fibres are also longer, and in that respect superior to those of the original product. But, unfortunately, there is not enough of them, and these places, too, have their troubles.

Buyers of Java sisal are chary of making contracts for it just now, for there was a terrible eruption last May of the Javanese volcano, "Kalut," in the region where are the sisal plantations, in which thirty-one villages were wiped out. One fibre mill, at least, is known to have been wrecked, but more fears are entertained for the potential shortage of labor, during the next year or so from the loss of lives, than from the possible damage to the plantations themselves.

If these should be badly damaged, however, which is not yet definitely known, the matter is very serious, for it requires from three to five years from the date of planting for the sisal plant to be ready for cutting.

Men gone to war, labor troubles and suchlike things have enormously hampered the production of hemp in New Zealand, where the workers are demanding impossible wages; and, to make bad worse, there are very serious complaints from the trade about the quality of the fibre product being lent during the years of the war from East Africa, both the late German colony and also the British. The cutting of short plants and immature leaves, and the insufficient de-gumming of the fibre, is charged against them.

Anxiety to make hay while the sun of high prices shone no doubt has been in part responsible for this, but I feel sure that something of it ought also to be charged to the war. In how many ways did it not hit us, and who would have dreamt of this one? Doubtless many estates were deprived of the stern supervision necessary to keep the natives up to the mark. One such, in British East Africa, I certainly know of, where the white manager answered the Empire's call, leaving the estate to be run as best it might be by his lonely little wife; and she carried on as well as she knew how—perhaps it was her twine you cursed that day it broke.

East Africa, Java, New Zealand, Manila, Yucatan—all, all of them struggling to give us binder twine—who'd ha' thought it!—and all the first four combined do not nearly approach the quantities

**MALTESE CROSS TIRES**

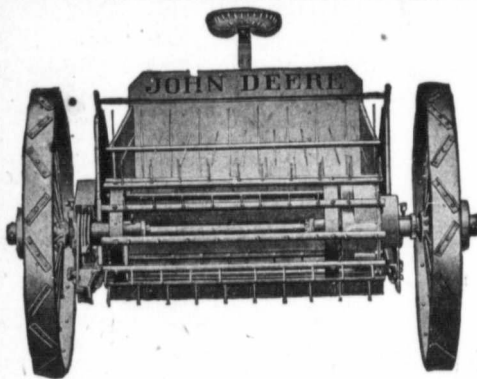
**TRADE MARK**

**W**E appreciate that by satisfying our customers we will receive a continuance of their patronage. This policy is instilled into our tire makers, who have the desire and experience to produce perfection.

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Maltese Cross Tires, Tubes and Accessories are sold in every town in Canada.

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Head Offices and Factory - TORONTO



# The Spreader with the Beater on the Axle

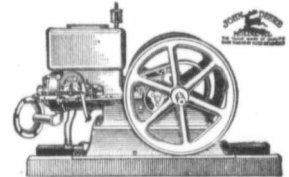
There is no question now about the necessity of a Spreader these days. The difference in crops on fertilized and unfertilized land is too strong to ignore. But to do the quickest, easiest and best job of manuring your land get the John Deere Spreader.

**Easy to load---Only hip-high  
Big Drive Wheels do not interfere  
when loading---Light running**

Get the John Deere Spreader because it is built on the right principle—doing away with all chains, stub axles and extra shafts. Not a single unnecessary part in the entire Spreader. High rear wheels set far back out of way when loading—front truck set under the seat to make very short turn. Very low down body allows use on windy days as the load is spread close to ground. Many other exceptional features make it the one best Spreader. See the John Deere Dealer nearest you.

## Waterloo Boy Stationary Kerosene Engines

The Kerosene engine has done more to eliminate farm drudgery than any other one thing. If you haven't an engine now get one to run the washing machine, to pump water, to grind feed, to run the churn or the grindstone, the straw cutter, the flanning mill, the wood saw, or other machinery. Waterloo Boy Stationary Kerosene Engines are backed by the John Deere Plow Co., Ltd., and bear their trade mark—your assurance of dependability. The very latest design for a substantial farm engine that is easy to operate, burning kerosene to best advantage—giving you high class power from low priced fuel.



**In stock ready for delivery, 2, 3, 5, 7, 9, and 14 h.p. sizes**

These engines are on sub-bases like illustration. Now is a good time to get the new engine working on all the fall and winter work.

See the John Deere Dealer To-Day

**John Deere Plow Co., Limited**

Winnipeg Regina  
Calgary Saakatoon  
Edmonton Lethbridge

furnished by the last-named, which, secure in its monopoly—the Mexican Government regulates the sales—and in the enormous increase in the world's acreage that must soon take place, now keeps up its prices and goes on piling up its stocks.

How can the price go down? I don't think it ever can, for many a year—not to any great extent.



Sandie: "I hear yer wife's in a gie seerious state, Weelum."  
Weelum: Aye, Sandy; She's had a sair fecht, but dae ye ken, man, I think she'll baffe us yet."

### Iron Duke All Right

Tourist (at the ancient rural hostelry, coming down to breakfast with a haggard, unrested appearance): "Last night, madam, you informed me that the great Duke of Wellington once stayed at this hotel. Is it a fact?"

Landlady: "It is, sir, a solemn fact. He slept in the very room you occupied last night."

Tourist: "Was it just the same then that it is now?"

Landlady: "Just the werry same."

Tourist: "The same bed in it?"  
Landlady: "The werry identical bed."

Tourist: "And the Duke of Wellington slept in it? He actually slept in it?"

Landlady: "Ain't that what I'm a-tellin' yer? The Dook of Wellington act'ly slept in the werry bed what you had last night."

Tourist: "No wonder they called him the Iron Duke."

"Father," said the vicar's son, "my master says that 'collect' and 'congregate' mean the same thing. Do they?"

"Perhaps they do, my son," said the clergyman; "but you may tell your master that there is a vast difference between a congregation and a collection."

## Cletrac TANK-TYPE TRACTOR

### Puts More Land Under Crop

It is a proven fact that the Cletrac Tank-Type Tractor saves money on the farm.

But—if the Cletrac Tank-Type Tractor didn't save a dollar of the cost of plowing, discing and harrowing—it would still be a sound investment and a big profit-maker.

Farmers who own Cletrac Tractors have their farms in good shape—more of their land is earning money. And because it fits the land better the Cletrac increases the yield per acre.

Plows  $3\frac{1}{2}$  miles an hour. Climbs in and out of places that block other tractors.

The Cletrac is a kerosene (coal-oil) tractor—uses no more kerosene than most tractors use of gas.

Don't make a decision on the tractor till you have studied *all the facts*. Two most interesting books, "Our Owners Say" and "Selecting a Tractor" free for the asking. Write now.

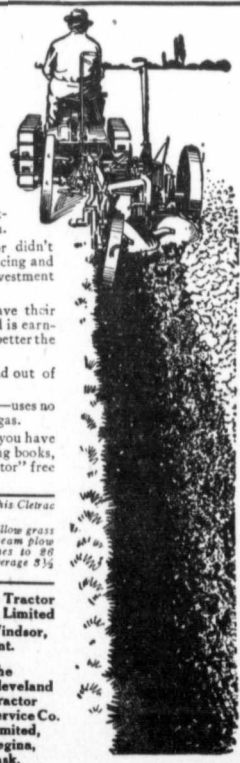
Mr. C. S. Wing, of Ponoka, Alta., writes about his Cletrac Tank-Type Tractor:

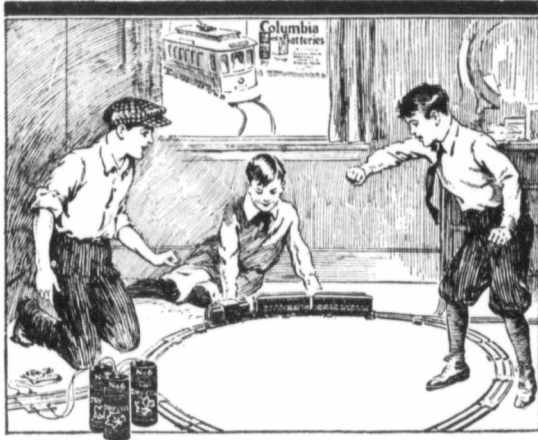
"I have broken 225 acres of sod, all heavy willow grass land. I pulled a 20-inch John Deere wooden beam plow with a side cutter. Sod turned from 20 inches to 26 inches wide from 6 inches to 18 inches deep; average  $5\frac{1}{2}$  acres per day."



The Cleveland Tractor Co. of Canada, Limited  
Windsor, Ont.

The Cleveland Tractor Service Co. Limited,  
Regina, Sask.





*It's the Same Old "Juice"*

—the Electricity that whizzes the Big Trolley Car along or pours from the Fiery Little Columbia to drive the Youngsters' Train

**E**LECTRICITY for hustling the big trolley car comes from mammoth generators. . . . The youngsters' train gets its snap and go from the Fiery Little Columbia. . . . In both cases it is the same kind of electricity.

Toys themselves appear to enjoy the frolic when spun around by Columbias. No connection with the house-lighting fixtures is needed—the whole outfit may be toted up to the garret, out on the lawn, wherever the good time is—and with absolute safety.

What a marvelous thing this Columbia Dry Battery is—and what a lot of uses! Motionless, yet moving toys at a merry clip; cold, yet firing the fuel in autos, motorboats, trucks, tractors, and farm engines; silent, yet giving a vigorous tone to telephones, bells, and buzzers; lightless, yet illuminating lanterns, pocket lamps, and other portables. . . . Fahnestock Spring Clip Binding Posts may be had without extra charge.

**THE STORAGE BATTERY**

**W**HEN you place a Columbia Storage Battery in your car you equip with the battery that's built for definite power and long life. Look for the famous Columbia Pyramid Seal stamped on the connectors.

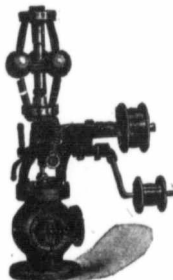
Columbia Storage Battery Service is all around. Stop in and see how easily and gladly they make certain that every user gets the performance to which his purchase entitles him.

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**Columbia**  
Dry and  
Storage Batteries

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**Steam or Gas Tractors**



Equipped with

**PICKERING**  
"THE GOVERNOR WITHOUT JOINTS"

give greatest efficiency  
**FITTED TO EVERY BUILD OF ENGINE**  
Patent Ball Ringer Speed Changer Supplied  
on all Genuine Pickering Governors.

Will increase speed 50% or more.

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PORTLAND

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**Overhauling the Thresher**

A Big Job—But it can be Simplified by going at it Systematically.

By FRANK F. SANDERSON, M.E.

**T**HE man who is acquainted with the threshing machine is not unacquainted with grief. No machine gives better service than a good thresher, properly cared for; but such care is quite essential. The thresher has so many moving parts—in fact, it is almost all moving parts—and it has such terrific work to do, that to keep it going through the season the operator must start it off in perfect running condition.

Overhauling is a big job, but it can be done up in surprisingly short order by following a definite route mapped out in advance. The chart on the page opposite, condensed from the recommendations of Elmer Johnson, the government agricultural engineer, makes a convenient map for chasing trouble. The operator that follows this chart straight through will get his machine into shape in quick time, and can be sure it is ready for the season's run.

Two jobs the operator is constantly up against, referred to in the chart, are babbitting and belting. Some suggestions are offered for doing them in the easiest and most workmanlike way.

**Babbitting**

Remove the shaft, chip out all the old babbitt and clean the bearing with gasoline. Wrap a sheet of paper—about 1/100 of an inch thick—smoothly around the shaft and stick the lapped ends together with mucilage. Replace the shaft, line it up and block securely. Put stiff putty, or clay, around the shaft to close up the end of the bearing and keep the hot metal from running out. Make funnels at the top of each end of the bearing. These can be used to pour the metal in, and to allow the escape of the air.

Cardboard washers, with an outside diameter a little larger than that of the hole to be babbitted, slipped up snug to the ends of the casting and tight on the shaft will ensure smooth ends.

After the cardboard shims are set between the two boxes and against the shaft the whole box may be poured at once. To allow the metal to run from the top half to the bottom, cut V-shaped notches in the edges of the shims next the shaft.

Finish the bearing with a file, and try the shaft, with the paper removed. Paint the shaft with a light mixture of lampblack and oil. As the shaft is revolved, the

lampblack will catch on the high spots of the bearing. These can then be scraped down.

Make the oil-grooves with a round-nose chisel, extending radially from the oil hole to near the edges of the bearing, and if possible opposite the side from which pressure comes.

Babbitt for good pouring should be hot enough to brown the end of a white pine stick. It should be sufficient in quantity to pour the bearings at one pouring, otherwise joints will be formed.

**THE THRESHERMAN'S OVERHAULING CHART**  
**CYLINDERS**

**Teeth**—Renew worn teeth. Replace bent or damaged teeth. Drive loose teeth in pace and draw tight.  
**Keys**—Inspect keys holding cylinders to shaft. Where old key cannot be driven tight, pull it and put in a new one.

**Bearing**—Remove shims from worn bearings till shaft is snug but turns freely. Clean out pipes and oil holes. Rebabbit where bearings are scored or badly worn.

**Shaft**—Smooth scores with fine file, first with circular motion, lifting on front of file and bearing down on handle, next draw-fling.

**Adjusting**—Leave 1/100-inch end play, or thickness of heavy wrapping paper.

**Balancing**—Place ends of shaft on surfaces in same plane and leveled both ways. Weight with slugs, wedges and tooth adjustment till cylinder will come to rest, when rolled, at any point.

**CONCAVES**

**Teeth**—Same as cylinder.  
**Adjusting**—Place all bars in circle and turn cylinder by hand. Adjust with set screws till majority of teeth are 1/4 inch apart. Adjust remainder with hammer.

**Raising and Lowering**—Replace worn eccentrics or cams.

**Back End**—Clean rust out of thread of adjustment screws, and be sure they are long enough.

**SEPARATING GRATES**

Tighten bolts, straighten bars, see that spacers are in place.  
Adjusting mechanism must be cleaned and oiled.

**FEEDER**

**Framework**—Tighten all bolts and braces. Replace split or worn wood-work.

Replace broken slats, belts or chains in carrier. Repair checked or split rollers.

Adjusting mechanism must work so that equal tension is exerted on each side of the carrier.

**Rotating Band Cutter**—Sharpen dull blades and replace broken or worn out.

**Reciprocating Band Cutter**—Knives as above. Inspect fastenings by removing shims or planing from edge of box.

**Retarder**—Tighten bolts on forks and blades, adjust boxings as above. Straighten or replace bent or broken blades.

**Feed Bottom**—Tighten bearings and connections and bolt or screw fish backs securely.

**Governor**—Replace badly worn friction disks, stud pin and sleeve.

**Leathers**—Replace lost or badly worn leathers or flats.

**BEATERS**

Examine bearings, center beaters. See that keys or set screws are tight. Smooth edges.  
 Timing—See that fingers or blades are so timed that they point always downward.

Fingers—Replace broken fingers, and space equally.

Placing Gears—Mark with chisel corresponding tooth and gear, where gears are removed for repairs.

Crates or Fish Backs — Tighten loose bolts or screws.

**CHAIN RAKES**

Inspect bearings. Replace broken slats and chains. Inspect tension mechanism.

**APRONS OR CHECK BOARDS**

Replace damaged canvas. Inspect hinges on check boards.

**STRAW RACKS—SHAKERS**

Replace broken slats, fingers, flash-back.

Crank Bearings—Same as in case of Feeder.

Framework—Replace split or broken woodwork.

Links—Tighten or replace loose links or hangers.

Pitmans—Bearings as with Feeder. Make sure pitmans are exactly the same height.

**CONVEYOR**

See that slats are O.K. and all nails driven in. No holes in metal bottom.

Shields—Screw wood shields tight to separator side. Replace if of canvas and worn.

Hangers—Inspect bearings. Level grain pan crosswise wire with respect to separator.

**CHAFFER**

Replace broken slats. See that blades respond to adjusting mechanism. Tighten bolt to par.

**AUGERS AND ELEVATORS**

Replace rusted troughs, beat out dents. Inspect bearings.

Housing—Tighten and replace bolts and screws. Replace tube that can't be smoothed with mallet. Secure all drag blocks.

Vibrating Screen—Inspect mechanism. Replace worn or rusted screen.

Chain Tightening—See that it takes up equally on each side.

Safety Friction Drive—Test and replace worn or broken parts.

**CLEANERS**

Inspect sieves, screens, frames, adjusting mechanism. Replace worn or rusted screenings.

Shoe—Make sure of shoe castings. Inspect pitmans and bearings; be sure pitmans are same length.

Shelves and Rollers—Inspect castings for damage. See that shelves work freely. Replace broken corrugated sections and wood shelves that are split or warped.

**FAN**

Inspect housing for rust or broken slats or boards, fan doors and locking mechanism.

Bearings—Adjust or rehabbit worn bearings.

Blades—Replace split or broken blades. Tighten set screws or keys that hold spider. Balance.

Windboards—Replace if broken. See that dash-pot governor works freely.

**STACKER**

Rivet plate over rusted fan housing. Inspect bearings. Shaft as with Cylinders.

Fan Blades—Tighten bolts to spider and spider key. Replace worn blades.

Fingers—Tighten and properly space spiral fingers on shaft. Bolt tight finger on fan grid.

Turret Mechanism—Inspect for broken castings and loose bolts.

Tube Elevating Mechanism—Inspect table for broken strands and loose bolts.

Telescoping Mechanism — Inspect for rusty chain, track and pinion.

Hood—Beat out dents. Replace broken or rotten rope.

**FINDING A SAFE LOAD FOR THE TRACTOR**

By Major Oliver B. Zimmerman in "Farmers' Magazine"

MANY a good tractor has gone to the junk heap years before its time for the sole reason that from the beginning it was overloaded. A good farmer would not think of working his horses until they fell in their tracks. The warning given by their heaving and panting would not pass unheeded. But with a tractor the heaving and panting — slowing down of the speed, knock or pound in the cylinder, killing the engine by a load it cannot overcome, seem to go unheeded. As a result, one part after another gives way until the farmer finds himself all too soon with a worn-out tractor.

A misunderstanding of how much a horse can do and how much a tractor should do undoubtedly accounts for many an overload. We probably think one horse gives us one horse-power, three horses, three horse-power, and a tractor rated at 10 horse-power on the drawbar more than three times as much power as a three-horse team.

Does it? The average horse can exert a pull of about 200 pounds travelling two miles per hour.

200 lb. x 10,560 ft. = 2,112,000 ft. lb. in 1 hour.

2,112,000 ÷ 60 = 34,200 ft. in 1 min.

1 horse-power = 33,000 ft. lb. per min., therefore a horse pulling 200 lbs. is developing a little more than 1 mechanical horse-power.

How much plowing could horses do exerting just this amount of power? The average resistance to the passage of a plow through the soil is about 5 lb. per sq. in. of the perpendicular cross section of cut. This resistance varies with different soil types and conditions as shown in the table herewith:

	Lbs. per sq. in.
In sandy soil	2 to 3
In corn stubble	3
In wheat stubble	4
In blue grass sod	6
In June grass sod	6
In clover sod	7
In clay sod	8
In prairie sod	15
In virgin sod	15
In gumbo	20

(The soil resistance per square inch of furrow slice turned varies greatly in different sections of the country. Tests made by the Hyatt Roller Bearing Company showed that Texas cornstalk stubble required an average of 8 pounds to the square inch of furrow slice turned, while Bermuda sod required 11 pounds to the square inch of furrow slice.)

Suppose we used 14-inch plows and plow 6 inches deep. A cross section of this plow would be 14x6 or 84 square inches. At an average pressure of 5 lb. per sq. in., we have 5x84 or 420 lb. per plow. Two plows would require a pull of 2x420 or 840 lb. We found

# Red Wing

## THRESHER BELTS

### Strength

**T**HE first essential of a thresher belt is **STRENGTH**. (You get **EXTRA** strength in **RED WING** Thresher Belts).

Strength means more than power — it means a grip that won't slip, no matter how hard the drive; and it means freedom from break-downs.

With a belt like **RED WING** to carry the load, you can go through the biggest and busiest threshing season without a hitch or delay.

**RED WING** Thresher Belts stand right up to the work in any kind of Western weather.

Don't risk break-downs and delays in the midst of the threshing — get your **RED WING** Belt **NOW**.

Write our nearest branch if you are unable to get **RED WING** Belts in your neighborhood.

**Dominion Rubber System Service Branches**

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 BRANDON, REGINA,  
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 and LETHBRIDGE.

# Heider

## 15% to 20% Fewer Parts —Years Added to Tractor Life

**H**EIDER Friction Drive does away with clutch, transmission gears and bevel gears. All three units are in one. Power ordinarily used up by these parts is put into drawbar pull or belt work. Steady, resistless power under perfect control. Seven speeds forward, seven reverse, for traction or belt work with one motor speed, one lever. Saves wear because of fewer parts. Easier operation—the simplest drive known. No transmission gears mean no gear stripping.

**11 Years Actual Field Work**  
You do not have to take a one or two days' "demonstration" as proof of Heider. America's leading power farmers have been using Heiders for 11 years. Many of the original Heiders are in faithful use today.

Write for our new illustrated catalog of HEIDER, which also describes the famous Rock Island CTX Tractor Plows and the Rock Island No. 38 One-Man Tractor Disc.

**Rock Island No. 38 One-Man Tractor Disc**  
Close-up levers. One man easily operates both tractor and disc.

**What Users Are Saying**  
"I bought a Heider 9-16, with plow attached, last spring and am highly pleased. Would not exchange it for any other." Eugene Siles, Kyria, O.  
"Have used my Heider 12-20 for two years; the longer I use it the better I appreciate its value."  
Henry Adam, Warren, Minn.  
"I purchased my Heider three years ago, I farm 350 acres, and if I was purchasing another it would be a Heider." A. L. Barnes, Chappell, Neb.  
Waterloo Manufacturing Co., Waterloo, Portage La Prairie, Saskatoon, Regina, Calgary, Mfld. by Rock Island Plow Co., Rock Island, Ill.

**Rock Island One-Man Outfits**  
Heider Model D 8-10 with No. 3 Rock Island L.P.F. two-bottom Power Lift Plow directly attached. Your hands guide the tractor. Your foot controls the plow.

**Model C 12-20**  
With No. 19 Rock Island 2-3 Bottom CTX Power Lift Plow Attached

**Burns Kerosene**

previously that at 2 miles per hour a horse pulled about 200 lb. and exerted a little over 1 horse-power. If the horse had exerted only 188 lb. pull it would have been exactly 1 horse-power. Dividing 840×188, we find that we need practically 4½ mechanical horse-power to pull the two 14-inch plows 6 inches deep.

As the plows start into the soil the horses must overcome 1,200 to 1,500 lb. resistance, or they must exert from 6 to 8 horse-power. They can do this for a short time. After the plowing is well started the resistance lowers until it reaches normal, or about 840 lb. or 4½ horse-power. Suddenly the plow strikes a root or a stone or hard pan. Up goes the resistance again to 8 horse-power.

It must be apparent from this that it wouldn't be safe to go into a field with plows needing 4½ h.p. for ordinary work unless you had at last again as much power in reserve to take care of emergencies. A horse capable of pulling 1 horse-power on an average can exert from 4 to 5 horse-power for a short pull. It is this reserve power which enables horses to get through with the work.

The same reserve power is needed in a tractor. If 4½ horse-power ordinarily would handle the load, your tractor should have 4½ more in reserve, or a total of 9 horse-power. There are times in plowing when the resistance is doubled. When those times come, if you have no reserve, you put on an overload, and in just a few moments do an untold amount of injury to your tractor.

A throttled-governed tractor with plenty of reserve power is no more expensive to operate than one working up to full capacity all the time. Throttle-governed tractors use fuel only in proportion to the load, consequently a 10-horse tractor with a 5-horse load uses no more fuel than a 5-horse tractor with the same load. When an overload comes your reserve power will take you through

without any change in the engine speed or any excessive strains.

Find the safe load for your tractor. The ideal way would be to try the tractor on various parts of your farm with a dynamometer between the tractor and the plow, so that you can get the average soil resistance per plow bottom. Knowing the rated horse-power of your tractor and its speed and the average soil resistance of your farm, by using the method of figuring given above you can easily tell how many and what size plow bottoms to use to avoid all danger of overload.

### Government Experts Caution Against Overloading Tractors

The United States Government, in Farmers' Bulletin No. 719, makes some very important statements along this line, as follows:

"It does not pay to overload a tractor any more than it does to overload a horse. Three plows behind a two-plow tractor will cover only a little more ground as a rule, than will two plows, because the tractor usually will travel a little slower, partly because the motor is overloaded and does not maintain its proper speed, and partly because the drive wheels will slip more with a load heavier than the machine was designed to pull. As a result, delays on account of small holes or slight grades will be more common, as will also mechanical difficulties."

### Symptoms of Tractor Overloading

In running a tractor the operator soon gets to recognize the sound and regularity of the exhaust as an indication of its speed and running condition. An overload reduces the normal speed of the motor, which in turn cuts down the number of exhaust sounds per minute. Any load which slows the tractor down in this manner is an overload and is more than the prescribed amount it should pull with safety.

## A. Stanley Jones

### THRESHERS

**Saskatoon Sask.**

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All freight paid, \$809.00 cash, \$860.00 time, designed for the "Fordson."  
Complete Outfits, engines and separators, from \$743.00 to \$1,387.00. Threshers alone from \$457.00 to \$860.00.

We have a thresher for any engine from 3 H.P. up to 30 H.P.  
The time is passing. Snow time soon. Are you threshed or still waiting? Order your outfit now. Immediate shipment and no more need to worry. You won't have

### GRAIN COVERED WITH SNOW!

No. 4—Combination 28-36 Separator, Hand-Feed, Wind Stacker, 11 H.P. Engine, Clutch Pulley, Oscillating Magneto, all Belts.

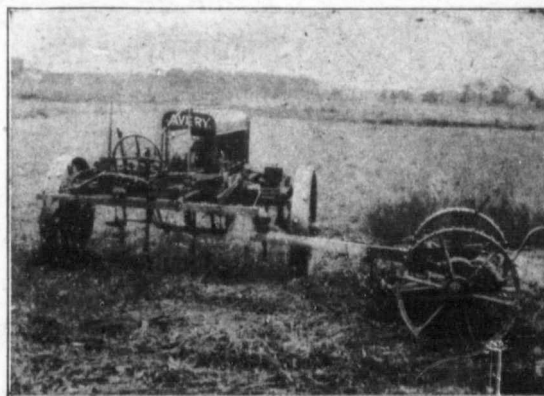
**ALL FREIGHT PAID**

Cash: \$1,159.00      Time: \$1,292.00

No. 4A—Same as above, but with Self-feeder, instead of Hand-feed.  
Cash: \$1,244.00  
Time: \$1,387.00

Capacity, about 700 wheat and 1,200 oats per day.

Fine Illustrated Catalogue Free



The Finest Corner is Squared to an Inch



A common practice when the motor of a tractor slows down under an overload is to disengage the clutch and allow the motor to regain its normal speed, then engage the clutch again, relying upon the momentum of the heavy flywheels to "pull her through." This is dangerous practice, for the almost irresistible power of the flywheels throws excessive strain on the other parts of the tractor and something must give way sooner or later. In cases of this kind it would be better and safer to ease up the load in starting, and until the tractor can handle it and still keep up the normal speed of the motor. To illustrate the point, imagine a team of horses hitched to a rope that in turn is attached to some heavy object. Suppose the horses were started into a gallop as the slack was taken out of the rope. Then the terrible strain of the load would very likely throw the horses or their feet, injuring them as well as tearing the harness to pieces.

Variation in kinds of soil, degree of moisture and topography of land make it impossible to state how many plows a certain tractor will pull. In view of this fact, and in view of the fact that the average operator of any size tractor almost invariably tries to get more out of his machine than it was built to do, he is taking the same chances that he would take if the tractors consisted of so many horses that he was taxing to their limit for the sake of turning over a few more furrows daily. The sensible thing to do with any machine, and especially the tractor, which represents a rather larger investment than the average farm machine, is to treat it considerably with respect to the amount of work required daily.

**The Tractor Not to be Compared With the Automobile**

Everyone knows how rapidly the automobile depreciates in value. At the end of four years' time an automobile is worth only about 30 per cent of the original investment. A small fraction of this is due to its being "out of date," yet the same rule applies to standard makes of cars whose manufacturers do not change materially their models from year to year. Such cars, on the average, have a maximum speed of 50 to 60 miles per hour. They run, possibly, at an average speed of 15 to 20 miles per hour when used throughout these four years. Under ordinary conditions only 30 per cent of their rated horsepower is used. It is only under unusual road conditions, such as in mud or sand, climbing hills, or when a maximum speed is desired, that the automobile is taxed

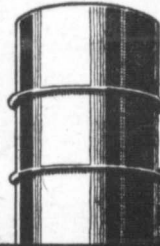
**Lubrication Very Important**

Are you giving your Automobile, Stationary Engine, Tractor and other farm machines the proper lubrication attention? All of these must be correctly lubricated if they are to give you the kind and length of service that they should give.

Imperial Farm Lubricants are well known to Canadian farmers. If you are using an

Imperial Oil brand, you cannot find a better lubricant—but it is possible that the way you use Imperial Lubricants can be improved. Note recommendations below. We have the right lubricant for each purpose and it is only by using the right one that results may be secured.

**HANDY SIZES**  
Imperial Lubricants are supplied in one half, one and four gallon sealed cans; half barrels and barrels. There is a stock of Imperial Lubricants conveniently near you.



**IMPERIAL OIL SERVICE**  
If you need advice on lubrication ask the *Imperial Oil man*. He knows the subject from every standpoint—knows the right oil for each farm machine. Exceptionally difficult problems will be referred to Imperial Engineers, without charge.

*A Correct Lubricant for every Farm Machine*



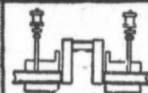
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For Grease Cup Lubrication of Bearings, a clean solidified oil high melting point.

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to its limit. Notwithstanding the length of time, yet it is common upon the car in general, causes a fact that the automobile is not knowledge that its value, due to falling off in value of 70 per cent taxed to its capacity for any wear and tear upon the motor and in four years.

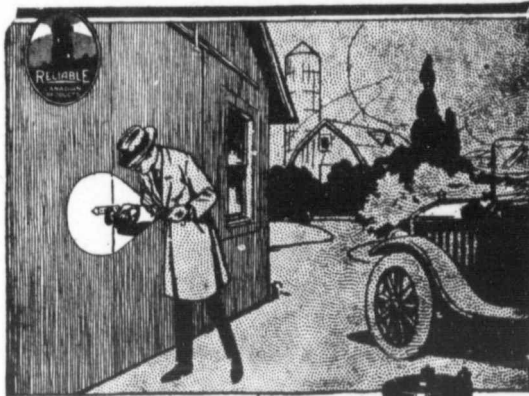
**Over There—  
Over Here**

**STAG** Chewing Tobacco is appreciated by both of Canada's war units—those who fought in Flanders and those who served at home.

It is also enjoyed by civilians of all classes throughout Canada and is recognized as being



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Flash a Reliable Tubular Flashlight where other lights can't go. Shoot a piercing, brilliant beam this way or that. No danger of fire or explosions. Instant light any time, any place—pocketed when not in use.

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**RELIABLE**  
TRADE MARK  
Canadian Products  
"Lively and Lasting"



**Tracing Engine "Misses"**

**W**HEN an engine misses at low speeds but runs well at high speed, it is often difficult to find the real cause.

The high-speed action indicates good ignition—although this is not always true. So the operator starts his trouble hunting at the carburetor.

As most carburetors have an adjustment for low or idling speeds and another for high speeds it is possible to adjust for idling without greatly changing the mixture at high speed.

A too-lean mixture will give a "pop back" in the carburetor when the engine is suddenly speeded up and a too-rich mixture makes the engine sluggish

low part of the burning gas on the "explosion" stroke to blow back into the intake pipe affecting the other cylinders.

Figure 1 shows in an exaggerated way the leak due to a worn valve stem and its guide. If the valve has a narrow groove cut part way round the seat it is an indication of this wear.

In overhead valve engines the rocker arm working the valve moves in an arc of a circle while the valve moves up and down in a straight line; so the valve is pushed sideways a little every time it is opened.

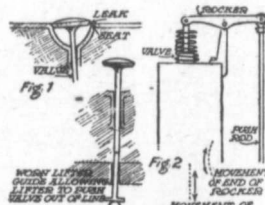
In L and T head motors the cams push the valve lifters sideways as they revolve. This causes the lifters and their guides to wear and after a time the lifter works out of line and pushes the valve also out of line, as shown in Fig. 2.

Most engines now are made with removable valve guides and valve-lifter guides, so it is an easy matter to replace them.

A miss from a worn valve will usually disappear at high speeds as the time of compression is much shorter and the percentage of charge of gas leaking out is less.

An air leak may be checked up by running the engine idle at rather low speed, and then putting on a heavy load so the engine slows down to about the same speed with the throttle well opened.

A slight air leak will cause a miss in the first case but not in the second. The suction in the intake pipe above the throttle is greater with the throttle closed than open, and so more air will leak in, in a given time. And with the engine working a larger amount of mixture is being



Wear in Valve Stem and Lifter, Causing Engine Misses

in picking up speed and there will be black smoke at the exhaust or a very peculiar sharp odor to it.

If the carburetor itself is not at fault there may be air leaks at any one of several places. Among them are the flange on the intake pipe; the connection between the intake pipe and the cylinders; a worn throttle valve stem.

An easy way to find air leaks is to squirt gasoline on the suspected part from the priming can. The suction will draw in the gasoline, thus showing the location of the leak.

However, the importance of small air leaks is often exaggerated. The proportions of air and gasoline which will burn well in an engine may be varied quite a little and a small leak will seldom cause a miss.

In making adjustments on one carburetor having a "flap" valve inside to control the mixture we removed a three-eighth-inch round plug in the side of the carburetor opening right into the intake pipe and the engine ran and fired evenly at all except very low speeds.

Often it will be found that the valve stems and their guides are worn and some air leaks in round the stem. But a more important factor is that the valve does not seat properly. A valve must be perfectly in line with the seat to close tight. If it is even a little out of line a large leak develops. An inlet valve which leaks al-



POLITENESS DONE TO A FINE ART

Tramp: "Can you oblige me with a bit o' bread, kind sir?"  
Son of the House: "Certainly, old chap, brown or white?"



**The Gray Turns Deep Even Furrows**

**A**DVERTISING the merits of the Gray tractor is like talking over the Long Distance Telephone, we can't "say" much. But do you remember when you saw us at the fair how we explained the Wide Drive Drum? How the drum crushed weeds and trash before it and gave the furrow a perfect turn? How the direct drive gave the most power? How the elimination of bevel gears and differential simplified the entire construction?

If we did not see you at the fair write for our illustrated booklet which fully explains these and other points.

**Gray Tractor Company of Canada Ltd.**  
307-309 Electric Railway Chambers  
Winnipeg, Man.

drawn in and the leak is then but a small part of the total.

An engine which would run very well at low speeds but would not fire evenly at high speeds furnished an interesting study in "trouble shooting."

First, water was found in the carburetor and gasoline line. This was taken out and the engine ran very well for a few hours, when the same trouble appeared again. The carburetor was taken off and taken apart, when it was found that one of the air holes surrounding the gasoline jet was clogged.

The engine started up and ran all right for awhile and then missed as before at high speed.

This time we were sure that the carburetor was working properly. The magneto was tested by "shorting" three plugs at a time and the engine would run on any one of the four cylinders and fire every shot. This is usually taken as good proof that the ignition is in proper working order, but it was not in this case. The breaker points in the magneto were too close together, giving insufficient "break." At low speed they would break, but at high speed the time for the break was so short and the current flowing was so strong that the primary current was not broken properly.

Running on one cylinder kept the speed down low enough to give good ignition.—J. W. Cottrell.

**PIPING THE SPRING**

THESE are many springs located in low, marshy places that could be utilized to much better advantage if the water were piped out and the ground about them filled in with stone and gravel. I have in mind a spring located in such a place, round which there was always a mudhole and in which trash of all kinds washed at every rain. The writer saw this spring piped and the ground filled in till no one would have known a spring ever existed there.

The spring was dug out and all foul mud removed. Enough one-inch pipe was coupled together to reach to a desirable place for the watering trough, which in this case was forty feet away and well out from the ravine. Then a short piece of pipe about two feet in length was joined to this by an elbow. This short piece of pipe was placed upright, with the

open end within six inches of the bottom of the excavated spring. With the pipe supported in place, first several large stones were filled round it in the bottom of the spring, then some smaller stones reaching up above the end

of the pipe. On this was still another layer of six inches of coarse gravel, followed by about the same amount of finer gravel and sand. Over all of this was a foot of clay, as near impervious to water as could be found. The clay was beaten down firmly with a mallet, and a mound of earth and heavy stones built over it. The water rose rapidly as the work progressed, but when the clay was put on the only outlet for the water was through the pipe. The long pipe was almost

level, with barely enough fall to drain constantly. It was found that in this way the water in the spring was made to rise several inches higher than it had ever done before, being prevented from overflowing except through the pipe.

The water in almost any spring can be made to reach a higher level if confined in this way, but it will be necessary to make a trial to see how high it will flow, before the pipe is placed permanently.

# Ford

## Announcement

FORD policy has always been one of progress.

We now announce a pronounced step forward.

Ford Touring Cars and Runabouts may still be purchased at the minimum price—Runabout \$660; Touring \$690.

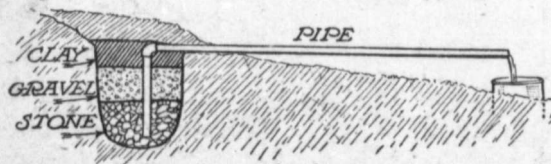
Electric Starting and Lighting equipment will be supplied if desired, at \$100.00 extra.

Coupe \$975, Sedan \$1175 (Closed model prices include electric starting and lighting equipment).

If you wish demountable rims, tire carrier and non-skid tires on the rear, they will be supplied on closed cars only, at \$25 extra.

These prices are f. o. b. Ford, Ontario, and do not include War Tax.

**Ford Motor Company of Canada**  
LIMITED  
Ford, Ontario





## Fiction vs. Fact

Have you been deceived and led to believe that Machinery "Made in Canada" is higher in price than the imported article?

### WHAT ARE THE FACTS?

The price of our 24-40 Imperial Separator with Self-Feeder Wind Stack and High Loader and Register, as per our published price list, is \$95 less f.o.b. factory in Ontario than a 22-36 (smaller) Separator with similar equipment and \$120 LESS than a 28-40 Separator with same equipment, f.o.b. factory in Michigan, as shown in regular price list issued by the manufacturer. The SAVING IN PRICE, f.o.b. Winnipeg is \$370 and \$420 respectively.

The price of our 15-30 Imperial Super Drive Tractor, f.o.b. factory in Ontario, is no more than a Tractor very similar in size and design is sold for f.o.b. factory in Illinois. The difference in price f.o.b. Winnipeg is HUNDREDS OF DOLLARS in favor of the Imperial Tractor "Made in Canada."

And this, notwithstanding the fact that we pay duty on some of the materials that enter into the construction of this machinery. We invite comparison, not only in PRICE, but in QUALITY.

How can we do it? Because of a thoroughly up-to-date plant, equipped with new automatic and other high grade and special machinery, and improved methods of manufacture.

Why, then, allow your money to go out of the country, where it is needed to build up our own resources, and repay the enormous expenditure of four years of war, when you can buy CHEAPER and BETTER machinery "Made in Canada."

Write for descriptive circulars and prices of our IMPERIAL LINE—Threshing Machines, Kerosene and Steam Tractors, etc.

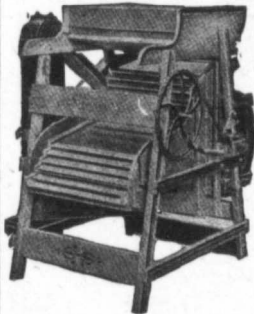
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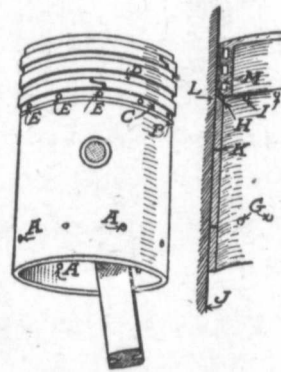
# When the Engine "Pumps Oil"

"YOUR engine is 'pumping oil,'" said a repair man to a car owner. "You are probably carrying too much oil in the crank case and you should have the pistons drilled. Sometimes it is pretty hard work to stop 'oil pumping,' but drilling the pistons in most instances helps a whole lot."

When lubricating oil gets past the rings of a piston, the engine is said to be "pumping oil," and it is a very troublesome matter. But the car owner can remedy the fault himself if he will but do a few things which are easily

accomplished. The holes at AAA must necessarily be drilled on an angle as shown in the section sketch at H. The inclination of the holes enables them to pass the thickened portion of the piston in which the rings are located.

In order to find a cure for "oil pumping" one must understand what takes place during that happening. The lower portions of the cylinder, say at J, for some distance up are covered with oil which has been splashed up from the crank case. When the piston sweeps down over the oil-coated portion of the cylinder, the oil fills the thin space K, between piston and cylinder wall J. And as the piston sweeps downward over the oil the ring B stops a portion of the oil, but the ring is unable to overcome the inertia of the body of oil which fills the cavity K, and the oil is forced under great pressure through the very small space between oil ring B and the cylinder wall into the cavity L, caused by the taper C.



How to Drill the Piston when the Engine Pumps Oil

As soon as the cavity L has been filled with oil, the ring M prevents the oil from passing into the combustion chamber, or rather is supposed to sweep back the excess of oil instead of passing over the lubricant. But such is the inertia force of the oil trapped in K and L that when ring M is weak or leaky it is unable to stop the oil and passes over it. Thus the engine does not "pump oil" at all, but the rings ride over the oil upon the cylinder walls before the oil can be pushed away by the rings.

accomplished. But if you attempt to drill the pistons yourself, be sure to drill them right. I recently saw the pistons of a six-cylinder car which someone had drilled, locating the holes as shown at AAA in the accompanying illustration.

Holes drilled thus do very little if any good in preventing oil from getting into the combustion chamber. The holes should be drilled at EEE in order to have the greatest possible efficiency. Usually when the engine "pumps oil" the piston rings are not what they should be. Either the rings are weak or they are badly fitting or worn too small, so that oil—and of course the compression—gets past them.

When the holes are drilled at EEEH, the oil as fast as trapped in cavity C or L can pass through the holes EEEH into the piston and run down the inside thereof back to the crank case. But when the holes are drilled at AAG, most of the oil is trapped above the holes, which therefore are unable to relieve the piston ring from the tremendous inertia pressure of the oil that is trapped with hydraulic-ram effect between the piston and the cylinder wall.

Some pistons are made with a slightly projecting ring at B, which fits the cylinder as tightly as possible. This ring is for the purpose of stopping oil, but it cannot stop all the oil. At C there may usually be found a slightly tapered portion of the piston which runs down to the space D in which the pistons are located. This, the piston space, may be about five thousandths of an inch smaller in diameter than the oil ring B.

When you do drill pistons, put in small holes and lots of them. Better to have eight holes one-sixteenth of an inch in diameter than a smaller number of larger holes; and do not forget to clean these holes every time the pistons are removed from the cylinders. Also, when you drill the pistons, put in some new and better rings. Then see that the oil is not too high in the crank case, and your engine will not be likely to "pump oil" to any extent.

The tapering space C is where the holes should be drilled, not near the lower end of the piston

# Best that Can be Made—And No Waiting

While there are other excellent belt products on the market, we do positively affirm that with the best raw materials natural science knows of—and which alone we use—it is not possible to make better belting for the great and continuous strain of threshing than we offer in our celebrated "Lion" Rubber and "Yellow Fellow" endless thresher belt. They have distinct features in strength, durability and gripping power which no other belt possesses and we therefore ask you to insist on getting the



**LION BRAND**  
**Rubber Belt**  
 or the  
**YELLOW FELLOW**  
**ENDLESS THRESHER BELT**



They are unbeaten in the field of grain production

and are sold by all thresher companies doing business in Canada. They may cost a trifle more than some fabrics that are always a big risk but that is forgotten in the added years of service, and we guarantee our goods against all disappointment from slippage or breaking. It is not possible to make better belting by any scientific method known at this day.

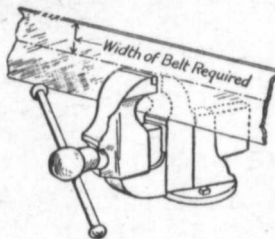
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### TO SPLIT BELTING

THE accompanying sketch illustrates a handy method for splitting any kind of belting.

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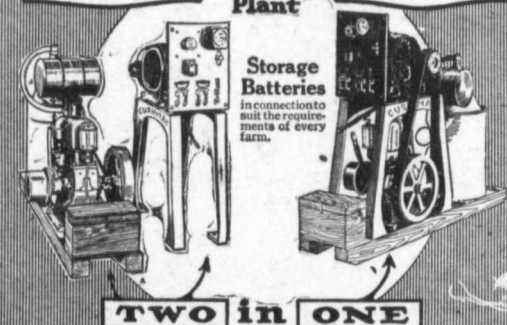
vise and change the position of the belt, keeping the line in plain view, and continue the operation. This method insures a square and even edge, and is a much more satisfactory method than using a straightedge.



Prisoner: "Well, sir, there was a lot of larkin' goin' on, celebratin' the harmistice, but I don't think as I so far forgot myself as to kiss 'im. 'If I did, your Washup, I deserves six months."

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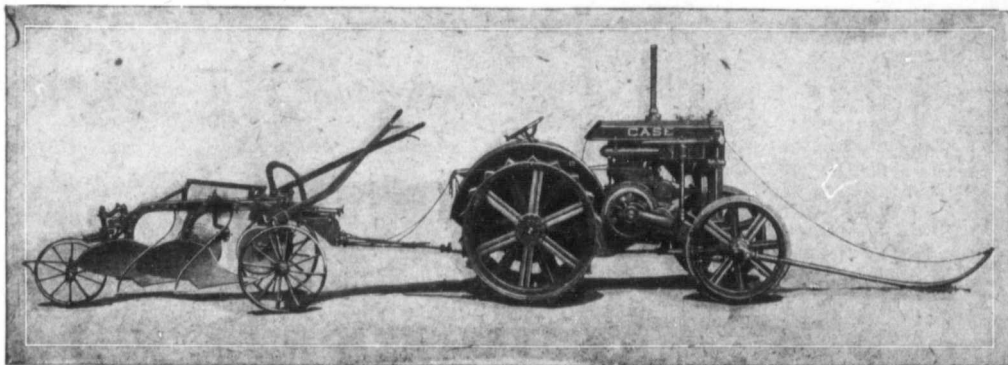


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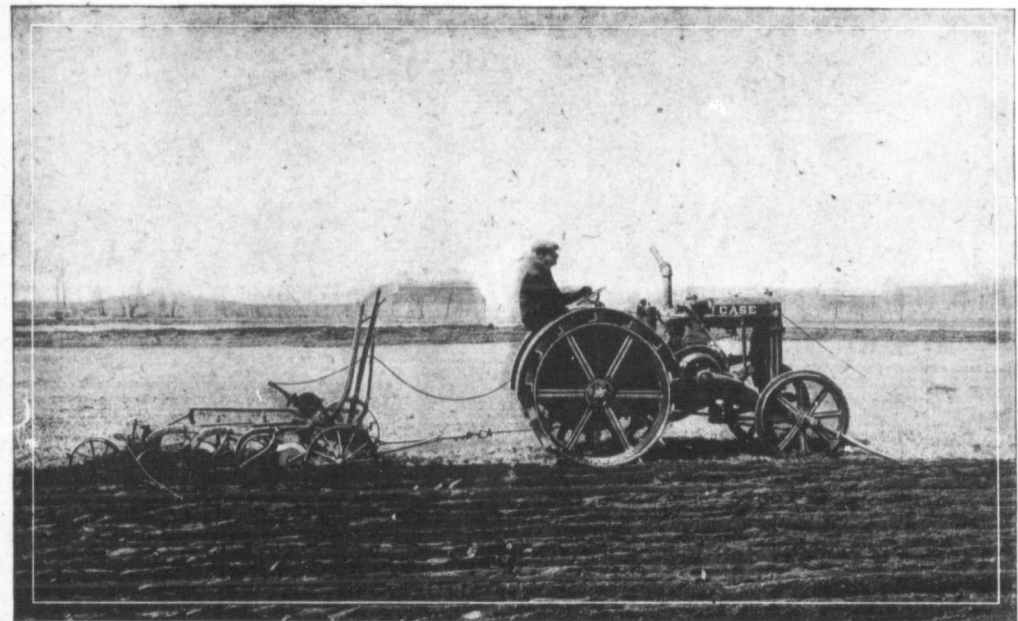
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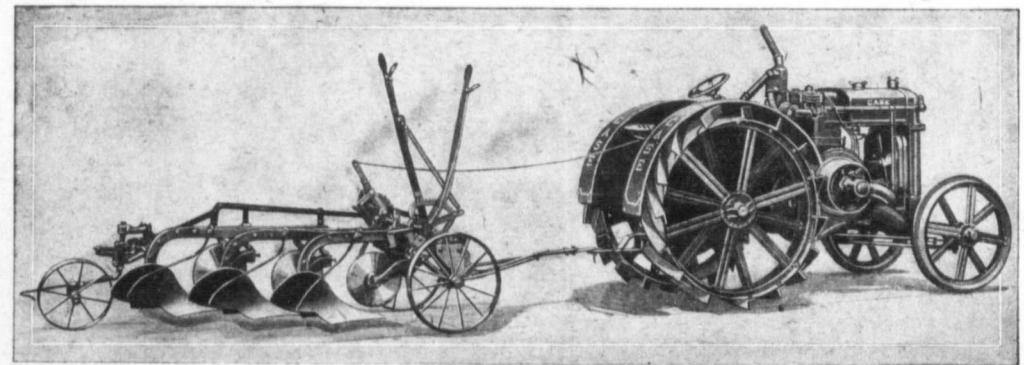


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purchasing and manufacturing facilities to keep costs at a minimum, but if you want *quality*, if you want the *latest and best in design*, if you want durable machinery backed by *service*, we believe you are willing to pay a little more for the extra value. It's the economical thing to do in the long run. You will be interested to know of the design of these tractor and plow outfits. Learn for yourself the advanced ideas incorporated. Then, by comparing with other makes, you will learn why Case power farming machinery has so many friends, and so many satisfied users recommending it to farmers. Write for information sent gladly on request.

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It is the greatest labor-saving and food-conserving machine ever introduced into Dairy Farming.

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because its bowl is supported at both ends, cannot wobble, and therefore 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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## Leguminous Crops on the Prairies

MANITOBA

By T. J. HARRISON, B.S.A., Professor of Field Husbandry, Manitoba Agricultural College.

**T**HE results on the Field Husbandry Department's experimental field, and on the College farm, at the Manitoba Agricultural College, would seem to indicate that there are only five biennial and perennial leguminous crops that can be grown at all successfully in this province. They are alfalfa, sweet clover, common red clover, alsike and white Dutch clover.

### Alfalfa

The soil on the College farm is a stiff clay resting on an impervious clay subsoil, and being very flat, the water frequently lies on portions of it, from one to two weeks in the spring. Alfalfa is a crop that is not generally con-

year it was broken up to make room for an expansion of the experimental field. In 1918 a field of 30 acres was seeded to alfalfa, without a nurse crop, on fall plowed land. The seed was sown about June 1 and in August a small cutting of alfalfa hay was secured. After the stand had recuperated it was pastured lightly with the ewes of the flock for the purpose of "flushing." The crop was allowed to go into winter with about 8 inches of top growth, and gives promise this spring of having come through the winter in good condition.

In the experimental field alfalfa has also proven to be hardy, this is especially so when the leading



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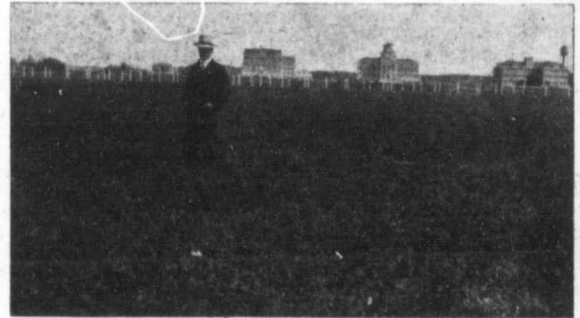
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Alfalfa on College Farm—Six Weeks After Seeding

sidered adapted to this type of soil, but it has proven to be quite hardy even under these seemingly adverse conditions. Among the hay crops, alfalfa and Western rye grass seem to be the most persistent. A field seeded down with alfalfa in 1912 produced hay each year until 1916, after that it was used as a pasture, sheep being pastured on it in the fall of 1917 until they had grazed it bare. The field, therefore, went into the hard winter of 1917-18 in bad condition, and it was thought it would be useless the following year. While the stand killed out to a considerable extent it was still thick enough to produce pasture during the summer of 1918. In the fall of that

varieties are sown. The results even would seem to indicate that when the following precautions are taken it can be grown successfully every year. (1) Select Grimm or Baltic varieties, (2) Inoculate the seed, (3) Sow it on summer-fallow or corn land, (4) Sow between May 15 and June 15, at the rate of 12 lbs. per acre, (5) Sow without nurse crop, (6) Allow it to go into winter with a good growth of top to hold the snow and thus prevent freezing out.

In the forage crop improvement field several strains of alfalfa have been isolated. The object in view is to combine hardiness, feeding quality, and heavy seeding propensities. A

few strains are giving promise along these lines and will be multiplied.

If a good seeder can be secured so that the cost of seed can be reduced it would seem that in this portion of the province alfalfa should become one of the important forage crops.

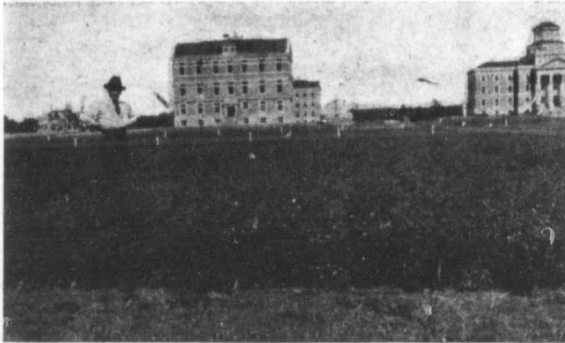
**Sweet Clover**

From the standpoint of hardness none in the province will dispute that sweet clover stands

regard to the culture of the crop may be summed up as follows:

- (1) For best results sow without a nurse crop, but fair stands are sometimes obtained when the nurse crop is used, if the seed is sown on summer-fallow, etc. (2) Sow the seed between May 15 and June 15, (3) Sow at the rate of about 15 to 18 lbs. per acre.

On the forage crop improvement field considerable work has been done in an endeavor to find



Alfalfa Sown June 15; Clipped until August 1. (Photographed August 23)

pre-eminent. There are many, however, who question its value from a feeding standpoint. In 1916 a small field was sown on a piece of land where alfalfa had failed to catch because of alkali. The following summer the field was fenced in along with a field of alfalfa and a field seeded with a mixture of oats and barley for pasture. The stock did not touch the sweet clover until the alfalfa and cereal mixture were pastured off. The sweet clover was by this time too rank and coarse to make good pasture, and it was consequently mown for fodder. The cattle were kept in the field, however, and pastured on the aftermath of the sweet clover, the remainder of the summer and

a strain that would be more adapted to hay production. Of the different sorts tried out, the white-flowered variety seems to give the most promise, from both the pasture and the cured fodder standpoint.

The conclusions that would be drawn from the present data obtainable from the College farm, and from observation throughout the country are that it is perfectly hardy and is adapted to a wider range of soils than alfalfa and can be grown to advantage for pasture almost any place in the province.

**Red Clover and Alsike Clover**

The red clover and alsike clover have not the wide range of usefulness that either the other



Test of Different Distances Apart in Planting Alfalfa

fall. They apparently relished the clover after they had cultivated the appetite, for they kept this field as closely grazed as the alfalfa.

In the experimental field it has been grown for four years with good results. The conclusions in

two legumes have. On the College farm they are sown in grass mixtures for both hay and pasture. The main reason for using them is that the seed is cheap, and if there is a failure to get a stand the monetary loss is not very great. In wet seasons fair

# Reputation



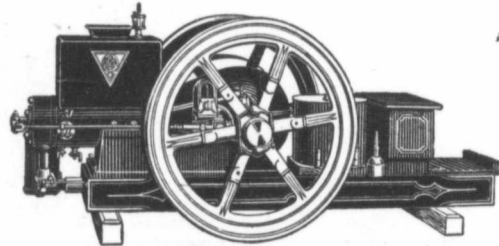
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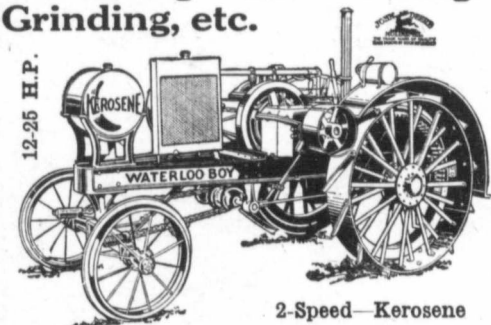
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and when used for seed next spring, gives very unsatisfactory results.

As the yield from potatoes of the same variety depends so much on the source of seed, one should try to obtain seed that is known to have come from a crop which was free from disease, and which grew vigorously until it was dug or killed by frost. If such information is not available, one will be more likely to get good seed from the cooler, than from the warmer parts of Canada.

**CIRCUMVENTING RATS**

**S**OMEbody has estimated the damage a single rat will do in a year in eating and destroying grain and other valuable things on the farm. I have forgotten what the amount is, but it is enough, as almost every farmer knows. Rats are an expensive luxury to have round. Some farmers attempt to kill them off, and some try to hang their best seed high up on wires to prevent the rodents from reaching them.

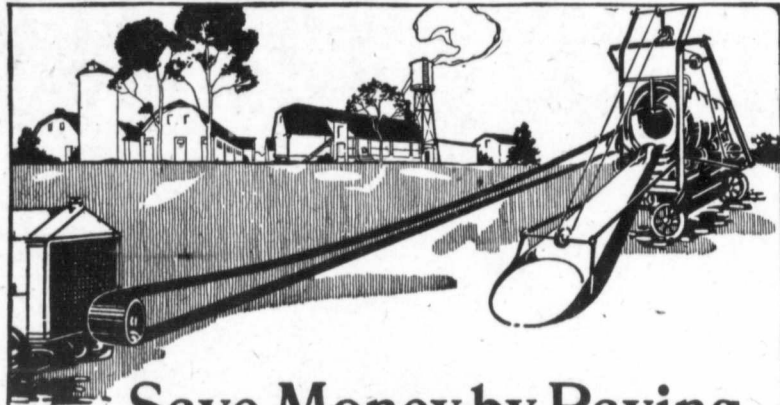
But the farm owner of the building shown in the accompanying illustration has absolutely checkmated every rat from reaching his valuable grain. This grain storage house stands on six square concrete posts, which are rather hard climbing for rats and mice. Then the floor and outside walls, including the door, are covered with galvanized iron, which was first used as roofing for another building. The iron was full of nail holes. Discarded metal roofing, not yet rusted, is as good for the purpose as unused new metal. With paint it will last many years. Nor does it matter if the metal sheets are slightly creased and crumpled. They will turn the rats just the same.

Often a farm building with metal roof burns and the burned metal is discarded because the galvanizing has been destroyed and the sheets are creased and crooked. However, burned metal-roofing sheets may be straightened and will be highly serviceable for lining or outside wall covering for grain houses for rat-proofing.

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## Fertilizers and their use in Canada

By FRANK T. SHORTT, M.A., D.Sc., Dominion Chemist

(Continued from page 31 August issue)

British Columbia

WITH regard to British Columbia, the results that we can review for the purpose of this paper have been chiefly obtained at the Experimental Farm at Agassiz, 80 miles from the coast, the soil being of a poor, gravelly or sandy nature. Many of these experiments have been in course for six and seven years. Potatoes and mangels are the two crops that have been chiefly used, though there is one extensive series under a four-year rotation, including one year of oats. The results have been somewhat irregular, varying with the character of the season, but emphatic evidence has been obtained as to the effectiveness of fertilizer applications in conjunction with manure, more especially on the mangel crop. The most profitable results have been obtained from the use of a "complete" fertilizer, that is, one supplying nitrogen, phosphoric acid and potash. In the larger number of instances the fertilizers yielded a good profit. The more profitable formulae contained nitrate of soda, 100 to 160 pounds; superphosphate, 350 to 400 pounds; and muriate of potash, 100 to 200 pounds, these amounts being per acre. The evidence so far is satisfactory, in pointing to a profitable use of fertilizers on hoed crops, provided that use is judicious and rational.

We are unable, at the present time, to say what may be the value of fertilizers in the interior of British Columbia—the so-called "dry belt," in which irrigation is practised—but experimental work is in progress there which will, in the course of a few years, furnish useful data. Argu-

ing from the nature of the soils and the climatic conditions that prevail there, however, it is not likely that the response will be of the same large order of merit that we have observed on the coast and on Vancouver Island.

### Central Experimental Farm

Investigational work with fertilizers was instituted on the Central Experimental Farm, Ottawa, in 1888, and is still in progress. As the data are very voluminous, time will not permit a review of all the numerous lines undertaken. It must suffice here to indicate some of the more important or outstanding of the results obtained. The soil is a light sandy loam, of medium quality, and, in the larger number of the experiments, especially during the latter years, a three-year or four-year rotation has been followed. Great difficulty has been experienced at this station from lack of uniformity in the land under experiment; indeed, this is a difficulty we have been forced to contend with at a considerable number of our stations, though all possible care was taken at the outset to select a suitable area for the work. It should be added that the work at Ottawa has included the comparison of fresh with rotted manure, the manurial value of clover as compared with farm manures and fertilizers, and the testing out of a number of materials not generally recognized as fertilizers.

Perhaps one of the most remarkable results obtained has been the discovery that, as far as ordinary farm crops are concerned, fresh and rotted manure, applied at the same rate, has

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given practically equal yields. The explanation for this is not easy to find, since rotted manure, weight for weight, is very considerably richer in plant food than fresh manure. It probably lies in the better inoculation of the soil with desirable micro-organisms for the conversion of soil plant food into assimilable forms by the fresh manure and the greater warmth set up by its fermentation in the soil affecting beneficially the crop in its early stages. But, be this as it may, we have the practical deduction that there is no concomitant gain from the use of rotted manure, in the ordinary farm rotation, for the labor involved in rotting it and the large losses in organic matter and plant food that inevitably accompany the operation. The quicker the farmer can get the manure into the land or onto the land the better, for it is never worth more than when first produced.

**Manurial Value of Clover**

The manurial value of clover need not be dwelt upon at any length. Our work in this connection is fairly well known throughout the Dominion. It has been of an exhaustive nature and has yielded most satisfactory results—indeed, it would be difficult to overestimate its value to Canadian agriculture. Chemically, physically and biologically the growth and turning under of clover improves the soil, and we have been enabled to demonstrate over and over again that a crop of clover in the rotation has a manurial effect equal to an application of farm manure of ten to fifteen tons per acre.

As regards fertilizers, our work has not shown any marked specific deficiency in our soils, though the response to nitrogenous fertilizers is perhaps the most pronounced. Almost invariably, the increases have been larger and more profitable from a complete fertilizer than from an application of any one or two of the fertilizer constituents.

While, in general farming, fertility cannot be economically maintained and profitable yields obtained by the exclusive use of fertilizers, our experiments have shown that fertilizers may be used to good advantage in conjunction with farm manures. This deduction is probably true for the greater number of our agricultural areas in Eastern Canada and on the western coast. When manure is scarce, or has to be purchased at a high price, then it will assuredly be found desirable to purchase fertilizers, not to take the place of the manure, but to supplement its scanty use. If we cannot apply manure at the rate of fifteen tons per acre, our experiments indicate

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that we can use half that quantity and dress with judicious amounts of fertilizer without materially affecting the results. The probability is that, today, on the average farm the net profits per acre would be much the same under either system of procedure. With cheaper fertilizers, or with a higher rating for farm manures, than we have today, there would probably be a more profitable showing from the manure and fertilizer mixture than from the exclusive use of manure.

No profitable response has been obtained from the direct applica-

tion to the soil of finely ground untreated mineral phosphate (apatite), though special experiments, in which this material was mixed with actively fermenting manure, the whole being left for several months, showed that small amounts, practically traces, of the insoluble phosphate were converted by this means into soluble forms.

Basic slag has proven the most useful phosphate fertilizer on sour soils or heavy clay loams, on soils naturally deficient in lime, and on peats and mucks, while on the lighter soils rich in

lime, superphosphate has given the quickest returns, especially for turnips and the cereals.

On land in fair condition a top dressing of nitrate of soda, applied in the early weeks of growth, has been found beneficial to grass, more particularly when intended for hay.

No potassic fertilizer has proved more valuable than good hardwood ashes. Of the three essentials, potash appears to be the least needed, but, on many light loams, it has given a good return, for encouraging the growth of clover and for veget-



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For with an Auto-Stop Razor there's nothing to fuss or bother about—that's the beauty of it. A few turns on the strop and you have a blade that would vie with the exclusive barber's in keeness. Then a few light, caressing strokes and the whisker is all gone, leaving your face smooth and refreshingly comfortable. To clean the razor, merely dip it in the basin and wipe it off. There's nothing to take apart, nothing to put together. From first to last—stropping, shaving and cleaning—the blade remains in the razor.

Sold everywhere with a money-back guarantee—Razor, strop and 12 blades, in an attractive case, complete, \$5.

**AUTOSTROP SAFETY RAZOR CO., LIMITED**  
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## Auto-Stop Safety Razor



## Horses and Carhartt Overalls

Surely the same considerations that impel a man to choose a first-class horse should also induce him to buy first-class overalls. The one big thing you will like about my Carhartt Overalls is that they are thoroughbred all the way through, and that means thoroughbred service, neat and finished tailoring and heavy denim cloth. Every seam is double stitched, every button is reinforced. Sizes are correct, extra large handy pockets, high back, high bib and generous seat. Behind it all is my guarantee of satisfaction and 25 years of knowing how.

**HAMILTON CARHARTT,**  
President

**HAMILTON CARHARTT COTTON MILLS, LIMITED**  
TORONTO, MONTREAL,  
WINNIPEG, VANCOUVER

ables and leafy crops generally. Muck and peaty soils frequently stand in need of this element. On heavy clay soils potash is not, as a rule, remunerative.

**Fertilizers in Eastern Canada**

By far the larger amount of our investigational work with fertilizers has been carried on in recent years in the Maritime Provinces, especially New Brunswick and Nova Scotia, and our results merit a more detailed consideration than we can now give to them. However, it is satisfactory to note that the deductions made from the worn at Ottawa hold good in the main for eastern Canada. There is, however, apparently a larger and more lucrative field for fertilizers in the east, not simply as we might suspect, from poorer soils, but from the fact that the crops upon which they are used are more particularly "money" crops, such as potatoes, apples, etc., from which a larger money return can be expected. If the maximum gross returns per acre are in the neighborhood of \$150 rather than \$50, it is obvious that the prospect for a remunerative response from the fertilizer is greatly enhanced.

The importance of manure and clover in maintaining the humus content of the soils has been strongly emphasized in all our work in Quebec and the Maritime Provinces. Perhaps I might say that the need for these means of soil improvement is greater, speaking generally, than in Ontario. But, be that as it may, we have almost invariably obtained the more lucrative responses from fertilizers on soils enriched by manure and under a rotation in which clover is a member. On potatoes and market garden crops generally, an application of manure at the rate of 15 tons per acre, with a moderate application, say, of a well-balanced fertilizer, has given more profitable returns than either 30 tons of manure or a dressing of 800 to 1,000 pounds

of a similar fertilizer without manure. These results have been confirmed at many points and in different seasons. The largest profits obtained have been from this combination and not from very large applications—1,000 pounds or over—of fertilizer, no matter how well blended to suit the soil and crop requirements. This, translated, means what we have already stated, that the role of fertilizers, if they are to be used profitably, is as a supplement to, and not as a substitute for, manure.

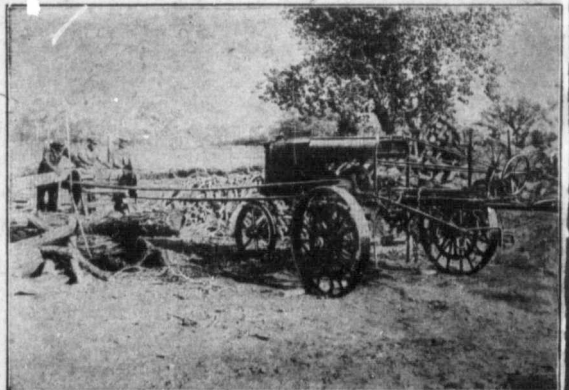
**Results of Experiments**

The majority of our experiments have shown that excessively large dressings of fertilizer have not given net profits per acre of the same magnitude as medium applications, say 400 to 600 pounds, and we counsel our farmers to ascertain, each for himself, by experimentation and the employment of an undressed area or check plot, what the limits of profitable application are for his land.

Again, we found that the greater return—the larger profit—came from using a complete fertilizer, that is, one containing nitrogen, phosphoric acid and potash, and this points to the conclusion that the function of fertilizers is to raise the small proportion of available plant food in the soil rather than to increase materially its total plant food content.

**Summarizing**

Our experiments, in general, have gone far towards establishing that a judicious and rational use of fertilizers may be depended on to yield a profit, that the exclusive use of fertilizers will neither keep up the fertility of the soil nor yield profitable returns, and that it is on soils of medium rather than poor quality that a lucrative response from their employment is to be expected, and, lastly, that it is on the "money" crops that we shall find the application most profitable.



Power and to Spare for the Biggest Wood Pile

**AGRICULTURE AS EDUCATION**

Summary of an Address by John Dearness, M.A., Principal of the Normal School, London, Ont.

**I**N the report of the Minister of Education (for Ontario) recently published it is stated that "there always has been and is still a feeling among the farmers themselves in opposition to the introduction of agriculture" into the public schools. For the statement—one that is often made elsewhere—it is worth while inquiring into the reasons. Permit me to say that I was raised on the farm, have lived with farmers a good part of my life, and believe that I can see the situation from the farmer's viewpoint. What he disparages is that his neighbor's daughter, possibly a city girl, hardly out of her teens should set herself up as an authority on his life-long trade or pretend to teach his children about the mistakes their father is making in farming. On the other hand if she makes no claim to know the right culture of various crops, the methods of improving herds, and selecting and mixing the suitable fertilizers, but confines her activities to impaling insects, making drawings or collections of seeds, mounting various museum specimens, and cultivating a few plots of flowers and vegetables in the name of a school garden, he thinks his children's time may be more profitably employed in what he calls the essentials. I do not know of a single instance where the subject of agriculture was properly introduced at the first trial of it that it met with any objection from a farmer.

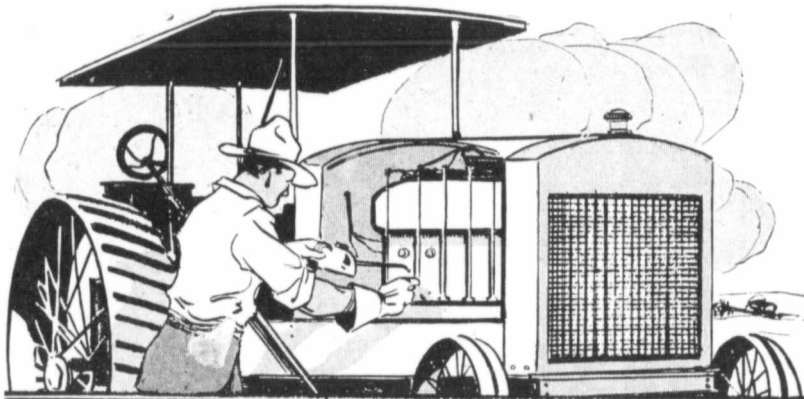
**A Liberalizing Value**

The subject of agriculture can be taught so as to have a liberalizing value like language and science, a socializing value like civics and history, and a vocational value. Prematurely forcing the vocational phases of the subject is the chief shortcoming of our present day efforts. The experience, and opportunities for experience, of children living on the farm—and this as well as the rural-home viewpoint should be intimately known by every rural teacher—can and should be used to deepen the children's sympathies, multiply their interests, and develop their powers of investigation. The gardens at school and homes and the near-by farmyards are the almost sufficient laboratories for the realization of these aims.

The use of the time of children below the high school entrance standard in filling note-books with vocational information in paragraphs about breeds of live-

stock, formulae for insecticides, rules for mixing fertilizers, etc., is comparable to the nearly obsolete practice of memorizing lists of counties, rivers, and capes in the geography lesson. The average child under fourteen would derive more benefit from studying in the school-yard under intelligent direction the adaptations of the hoof, mouth, and other organs of a cow, even though she be a scrub, than by looking at pictures and learning comparisons of Holsteins with Shorthorns. The sympathetic, first-hand study of a useful farm animal that responds to human care and kindness and that can, like the children themselves, be hungry and afraid, can get angry and fight for its young, is incomparably better for public school grades than speculating on the prospective profits of preparing it for the butcher's block.

It is one thing for teachers to



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Polarine doesn't break down or gum under any service condition. The most of the carbon goes out with the exhaust. Very little collects on the piston heads, spark plugs or cylinders. The engine keeps clean and free—ready for instant, powerful action.

Polarine contains no acid to pit cylinders and eat away the valves—no grit or foreign matter to hamper engine operation. You get more acres plowed, harrowed and harvested per tractor—more bushels per man, less

fuel expense and more years of good service from your tractor and engine.

Polarine seals in the power, and makes every bit tell, the year round.

Imperial Polarine seals in the power and makes every bit tell the year round. Sold in three grades—Imperial Polarine, Imperial Polarine Heavy and Imperial Polarine A. For motors that require an unusually heavy lubricant. In one-half, one and four-gallon sealed cans—in steel barrels and half-barrels.

To be sure you get oil that suits your engine consult the Imperial Oil man. Imperial Polarine for sale by good dealers everywhere.

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If you desire the best returns for your cream—bill your **NEXT CAN** to us. Our prices always highest—test and weights correct and returns mailed promptly.

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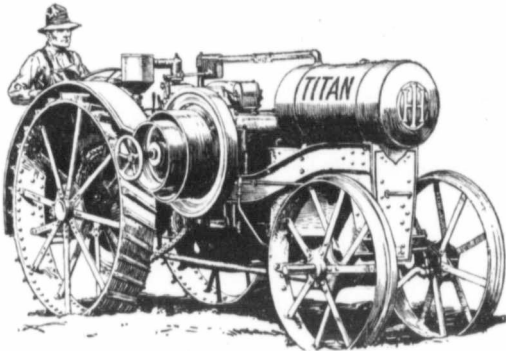
**OXY-ACETYLENE WELDING APPARATUS and SUPPLIES**

We can supply a thoroughly practical outfit from \$100.00 up. There should be at least one plant in every district to repair breakage quickly and **SAVE TIME and MONEY.** Up-to-date farmers with Traction Engines are putting in welding outfits and doing their own and their neighbors' repairs. We give free **BROKEN CASTINGS** instructions to purchasers. **SEND YOUR BROKEN CASTINGS** Seered Cylinders or any kind of Repairs. We Re-bore Cylinders, True Up Crank Shafts, Re-tip Boiler Flues and are in a position to handle any repair job promptly.

*Nothing too large or too small*

**GIEGER WELDING WORKS, SASKATOON**

## New Titan 10-20 Prices



Beginning July 8th, 1919, the 1920 price of the Titan 10-20 kerosene tractor is

**\$1,100**

CASH F. O. B.  
Winnipeg and Brandon

**\$1,120**

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Estevan, Regina and  
Yorkton

Corresponding Reductions Apply at Eastern Canadian Branches

Reasonable terms will be given to any man who cannot pay cash in full. His Titan will cost him but little more.

**\$1,135**

CASH F. O. B.  
Saskatoon and N. Battleford

**\$1,150**

CASH F. O. B.  
Calgary, Edmonton and  
Lethbridge

**T**HERE is no "joker" in this price. We are not telling you one story in this advertisement and then leaving it for our agents to break the sad news that the advertised price won't buy a tractor unless you pay extra for a lot of necessary features. The Titan agent won't charge you extra for "starting and service" before he can deliver the tractor. He won't show you a machine stripped of any of these essential parts—belt pulley, fenders, governor, drawbar, tools—and then tell you that you can have these things by paying extra for them. The Titan at this advertised price is a complete 10-20 kerosene tractor, ready to give you best threshing and drawbar power.

Then there is another thing. We are not experimenting at your expense when we sell you a Titan 10-20. There is real farm machine and tractor manufacturing experience back of it. We have been in the farm machine business for 88 years and have been supplying tractors for 14 years. Not another company in the world knows the farmer's power and machine requirements as the Harvester organization does.

Would you entrust your bank account to a man who had never had any experience in handling money? Will you risk your farm profits in a tractor built by designers whose knowledge of farming is limited to books and a drawing board? It will pay you to think about these things when you buy your tractor.

### INTERNATIONAL HARVESTER COMPANY OF CANADA LTD.

WESTERN BRANCHES—BRANDON, WINNIPEG, MAN., CALGARY, EDMONTON, LETHBRIDGE, ALTA.  
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acquire knowledge of crops and animals, soils and insects from manuals and lectures but quite another thing to learn how to use this knowledge for the education of public school children. If we had agricultural high schools with ample areas of land and farm buildings, in these we might very well attempt vocational agriculture. In the public schools there is very little of agriculture that cannot be taught and should not be taught with a liberalizing and socializing aim as nature study, granting that the term nature study is properly understood.

#### Agriculture and Nature Study

In the report on the Agricultural Instruction Act for the year 1917-1918 we are told that "in Ontario agriculture and nature study are two distinct subjects," while "in British Columbia elementary agriculture is regarded by the educational authorities as occupying a dual position. (1) for its own sake as a preparation for practical work in farming, (2) for the broader educational or disciplinary value. In the lower grades the latter aim is obviously most important and the former merely incidental, while in the advanced and high school grades the order is reversed and the scientific and economic viewpoints are uppermost. In the lower grades the work begins as an intimate personal study of environment, more or less informal in its character and closely adapting itself to those interests that predominate in the developing child's mind. In other words, the study of the forms, forces, and relationships of the child's natural environment afford the logical and proper basis for further advancement along the line of agricultural study. In this sense elementary agriculture is merely applied nature study. The agricultural work of the public schools, which includes the entire programme of nature study and school gardening, is the logical antecedent of a more scientific study of agriculture in the high schools."

Every student of the pedagogics of agriculture for children in the elementary schools will certainly endorse the British Columbia attitude. Indeed it is hard to see why some of the promoters of agriculture in the public schools are so much afraid of its being confused with nature study. Making lists of topics that can be taught as nature study which are not covered by the term agriculture proves nothing to the point. It is easy to make a list of agricultural topics that can be taught and should be taught as nature study; and, for children living on the farm, by the time this list is completed it will be found that as much time as can be spared for

nature study is taken up. In this way good teaching in both subjects is economically provided for.

#### The Development of the Child

The manual on this subject, although written mainly with the vocational aim in view, starts out with this valuable truth that the development of the child is more important than the information with which his memory may be loaded. Now the mental development of a child naturally follows the satisfaction of his desire to know the whys and wherefores of the facts, especially when the knowledge comes through his own research. I heard a speaker, emphasizing the vocational side, say to a body of teachers that if the class asks you why the mixture in the Babcock bottle becomes hot tell them not to mind that; make them expert in the art. This seems pedagogical heresy; better not to trouble with Babcock's test at all than to use it to quiet the spirit of investigation.

The true teacher would say: I am glad that you asked that question; I do not know the reason myself but now that you have asked it let us both try to find out. Work ceases to be drudgery when the worker's attitude towards it is inquisitive, experimental, interested. It should be kept in mind that the elementary school is foundational and not immediately vocational in either city or country. Agricultural nature study in the public school bears the same relation to farming that manual training does to carpentry; it is good for everybody whether for life on the farm or elsewhere.

No child is old enough to study agriculture who is too young to study it by laboratory method. That is where the importance of gardening is determined. A school garden is not a good laboratory without weeds and insects, fertilized and unfertilized plots, plants too close to each other and too far apart, in short without the exhibits of mistakes and their corrections. The proper use of the school garden is not to produce big cabbage-heads but well-developed children's heads and bodies too. Hence in the school garden there ought to be plots for single pupils or small groups of pupils and larger experimental plots for which the teacher and

### Lump Jaw

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Price \$2.50 a bottle. Sold under a positive guarantee since 1896. Your money back if it fails. Write for 96 pages and illustrated. It is Free.

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A small quantity applied when calves are young will prevent growth of Horns. A 50c tube sent postpaid is enough for 25 calves.

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53 Church St., Toronto, Ont.



p. In this both sub- provided the Child subject, al- with the starts out that the d is more formation y may be l develop- y follows desire to herefore when the ough his t speaker, onal side. rs that if the mix- tle be- to mind t in the lagogical ible with n to use vestiga-

the school as a whole are respon- sible. In rural schools there is opportunity for nearly every pupil to have a home garden and here is the place for the applica- tion of lessons learned in the school garden. The home garden should be as large as practicable, clean and well cultivated, and well filled with well-grown vegetables and fine flowers. The teacher should have detailed knowledge of and interest in all the pupils' home gardens. It is from these that the articles for exhibition at the school fairs should be taken.

**The Agricultural Project**

The home garden, the "agricul- tural project," and the school fair can be intimately related. They have large educational possibili- ties if rightly managed; indeed the combination can then hardly be rated too highly. There is, however, occasion for a word of caution. Every up-to-date speak- er and writer on school manage- ment lauds co-operation in contrast with competition as a motive in social and moral educa- tion. The school fair is stressing rivalry and competition so strongly that in some instances the stories of dishonesty among competitors have travelled far- ther than the reports of the merits of the articles exhibited. One would like for once to attend a school fair tingling with the spirit of co-operation. The evils of the prize system in school work generally are admitted; it can hardly be injurious every- where else and wholly beneficial in agriculture. There is an edu- cational problem here which managers of these worthy insti- tutions should consider seriously.

**A BLANKET OF FERTILIZER**

**Straw Properly Spread Makes an Ideal Top Dressing for Winter Crops—Straw Spreader Does the Work**

**By Martin Dawson**

**T**ON for ton, straw is about as valuable as manure in fertilizing elements. A ton of straw contains about 12 pounds of nitrogen, 4.2 pounds of phosphoric acid and 15 to 21 pounds of potash. These figures are close enough, though, of course, they will vary to a certain extent with the kind and quality of straw. Mixed barnyard manure contains in a ton about 10 pounds of nitrogen, 6.5 pounds of phosphoric acid and 12 to 16 pounds of potash.

Straw is worth at least as much as barnyard manure as fertilizer, but perhaps the greatest useful- ness lies in its value as a top dressing for crops sown in the

fall, and that have to go through a severe winter. It is an excellent insurance against winter killing for such crops as timothy, clover, alfalfa, winter wheat and rye. That is, it will prevent winter killing if it is spread evenly.

One of the greatest drawbacks to the use of straw has been the difficulty of getting an even dis- tribution. If the straw is left in large bunches the crop may be

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**GUARANTEE** Every garment bearing the **G.W.G.** Label is guaranteed to give full satisfac- tion to the wearer in fit, work- manship and quality, and to obtain this satisfaction should the garment prove defective, simply satisfy the merchant from whom purchased: he is authorized by us to replace it.

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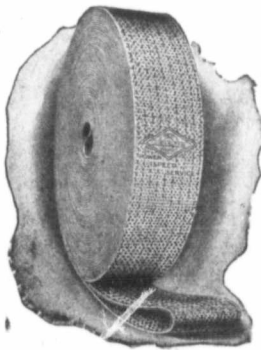


## Popular because Dependable!

When the threshing season is at its height, farmers and threshers alike are desirous that the work go forward smoothly with fewest possible interruptions. For this reason, the belt used on the threshing machine must be dependable—capable of performing the work required of it in steady, reliable fashion.

### "Gibraltar RedSpecial"

FRICTIONED-SURFACE BELTING



is dependable, and is giving utmost satisfaction on hundreds of threshing machines in the Prairie Provinces. Its frictioned surface gives it that pulley cling which minimizes slipping when wet, or burning and running off when tangled sheaves are drawn swiftly into the cylinders.

"Gibraltar RedSpecial" is high-priced in point of initial out-

lay, but most economical finally when long life and superior service are taken into account. As an added feature this year, we are stitching it at no extra cost to the purchaser.

### "Reliance"

is still the choice of those who insist on getting the best in the rubber-covered, stitched type.

Dunlop Canvas Threshing Belts and Dunlop Agricultural Hose are steadily upholding the enviable reputation of the "Two Hands" line.

## Dunlop Tire & Rubber Goods Company, Limited

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smothered—killed with kindness, so to speak. The straw-spreader, a machine designed especially to deliver an even dressing, not too heavy, overcomes this difficulty. Even a light application prevents the ice from forming solidly at the root of the plant, and thereby smothering it.

As the straw rots the fertility leaches into the soil, which is enriched thereby. But in addition to this chemical enrichment, which is considerable, the straw as it is worked into the ground improves the mechanical condition by finally being resolved into humus—which is quite as essential to plant growth as the more direct elements of plant food.

So the farmer who burns his straw stack is not only burning money, in the shape of plant food, he is burning out his soil as well, diminishing its capacity for maintaining useful soil bacteria. And so the farmer with a large amount of straw needs a straw spreader just as he needs a manure spreader. A thousand bushels of wheat will give about fifty tons of straw—enough to materially affect the yield of twenty-five acres of hay or grain, if properly spread. The fertilizing value alone would be not less than 600 pounds of nitrogen, and much more phosphoric acid and potash. Such a crop would amply justify the purchase of a good straw spreader.

### CARE OF FARM IMPLEMENTS

By Mark Meredith

TO secure the maximum return from farm implements and machinery it is essential that proper care should be taken of them while they are in use, but it is no less important that they should be carefully stored during the period when they are not in use. The present prices of implements and machinery should render unnecessary further emphasis on these points. Nevertheless, it is surprising to see the number of farmers who neglect to take ordinary care and who leave their implements and machines lying about exposed to the weather—frequently indeed, leaving them during the whole winter alongside a fence or ditch.

All implements wear out with use, but it is not so clearly realized that their "life" is much shortened by allowing some of the parts to rust and some to rot when the implements are not in use. Most farmers are aware how difficult it is to work a rusted implement or machine. There is a vast difference between plowing with a rusted board and a board brightened by use. This is due to the greater friction caused by the rust, and consequently the pull

on the horses is greater. To prevent rotting of the wooden parts of implements and machines that is necessary is an application of paint. To prevent rust a good brushing over with oil is very effective. For plow boards, grubber and cultivator tines, low is very good. It should be borne in mind that all parts should be thoroughly cleaned before applying paint or oil. Farmers would save a good deal of expense if paint were used more liberally in connection with their implements and machines as well as on their cars and carts. A suitable corner in a loft or shed can always be found for small implements and machines, such as corn drills, etc., if a house be not available, a rough shelter may be made with a few poles covered in on top with coarse thatch.

When implements are being stored a note should be made of parts requiring repair or renewal. This will permit of the necessary work being done, or the necessary parts being secured, in good time for the work of the succeeding season. At present, when there is difficulty and delay in obtaining parts, this matter should receive special attention.

### DAIRYING WILL HELP TO PAY CANADA'S DEBT

CANADA'S debt is now approximately two billion dollars, or about two hundred and fifty dollars for each and every man, woman and child in this country. When to this is added provincial, municipal and private debts, the sum is appalling. Yet we, as a young nation, with almost unlimited natural resources and plenty of courage, are facing the future with boldness and faith in our ability to make good. It is apparent that the only way we can pay our foreign debt is to sell food, manufactured articles, or natural products like timber and minerals. Our exports of food and manufactured products are now about equal, and were about six hundred million dollars each last year, but are likely to drop some, since war-demands will be considerably lessened. Of the food exports there are a few lines which are likely to continue at maximum for some years. Among these, dairy products and bacon, which is a side line for dairymen, are the most promising as regards stability of demand and price. The demand for veal and meats other than bacon is likely to fall off very rapidly in the near future. Not so with reference to dairy foods, because the world was short on these even before the war, and this condition has been very much accentuated since

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There is also the fact that it re-  
quires from three to five years to  
grow a cow, hence milk and the  
products of milk, cannot be very  
much increased in less than three  
to five years.

As an example of the wealth-  
producing possibilities of dairy-  
ing, let us look at the much-  
lauded dairy country, Denmark.  
According to a recent report, in  
June, 1914, Denmark owed foreign  
countries 235 million dollars. By  
December, 1916, foreign coun-  
tries owed Denmark 28 million  
dollars. In other words, a debit of  
235 millions was changed to a  
credit of 28 million dollars in the  
short space of two and one-half  
years. We grant that the condi-  
tions were unusually favorable  
for Danish dairying during that  
time, and similar conditions may  
not arise again, there or else-  
where, but previous to that time,  
under normal conditions, this  
little country had changed from a  
condition verging on bankruptcy  
about the middle of the nine-  
teenth century, so that in 1913 the  
deposits in Danish banks were  
four hundred and eighty-two  
and one-quarter million dollars,  
which deposits by 1918 were in-  
creased to over one thousand mil-  
lion dollars. This is remarkable  
for a country having a population  
of about three million people.  
How was this done? Largely by  
means of the dairy cow—her pro-  
ducts and by-products. What the  
dairy cow has done for Denmark  
she will do for Canada, if we  
adopt the right methods, applic-  
able to our own peculiar condi-  
tions of climate and location with  
reference to world-markets. Some  
great problems in dairying are  
looming up at the present time,  
and it remains to be seen whether  
or not Canadians are equal to the  
emergency.—H. H. D. in "Can-  
adian Countryman."

**Secrets of the Pyramids**

Startling revelations of the  
greatest interest to students of  
archaeology are promised in a  
work to be published shortly deal-  
ing with the Pyramids. The book,  
said Mr. W. H. Garrison, at a  
Colonial Institute meeting, was in  
course of preparation. He could  
not disclose the names of the  
authors, but they were a doctor  
and an engineer scientist.

"It is," he added, "going to  
prove a revelation and cause a  
sensation in the archaeological and  
historical world. I have seen some  
of the sheets and diagrams, and  
they are enough to make one's  
hair stand on end."

Lack of credit prevents some  
people from living beyond their  
means.

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MEN WHO WORK ON THE FARM  
KNOW BEST THE JOY OF A  
REFRESHING BOTTLE OF -  
*Maltum Stout*  
WHEN THE WORK IS HARDEST

79

**HELP TO DEBT**

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**THE SUCCESS COLLEGE**

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PRINCIPAL

**Manitoba Agricultural College and  
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*Opens Classes on OCTOBER 21st.*

Courses for everyone over fifteen years of age. Come and take a two months' course, or a five months' course, or a five years' course.

Engineering, Field Crops, Dairying, Horticulture, Live Stock Judging, and Poultry.

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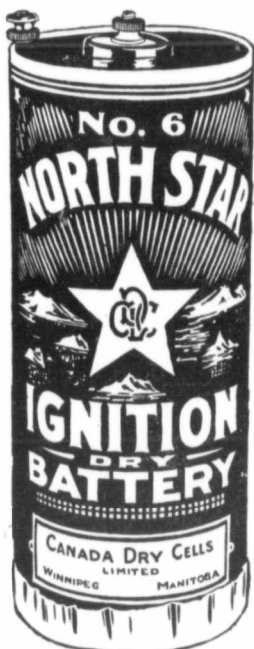
Splendid modern residence with accommodation for 350 Students—gymnasium, swimming pool, sitting rooms and large dining room, very comfortable study rooms.

Write for Calendar to the Registrar or to J. B. REYNOLDS, President

**Dr. Thomas' Electric Oil**

Relieves all Pain in Man or Beast

25 Cent Bottles at all Dealers



## THE "North Star"

is the great axis around which revolves the whole constellation of IGNITION DRY BATTERIES. As the North Star is to the mariner, the NORTH STAR Ignition Battery is to the whole business of internal combustion—a dead certainty, a solid rock of reliance upon which you can bank as you can on the constancy of the stars in their courses. The

## "North Star"

will enable you to get the very best out of your engine and fuel. There's no waiting and expensive delays if you are hitched to a "NORTH STAR" battery they simply cannot occur—from faulty ignition anyhow. The "NORTH STAR" delivers a sure, fat hot spark that ignites every particle of the gas vapor, giving maximum power for the engine. This perfect fuel consumption also greatly reduces the collecting of carbon—thus saving the valuable time one must otherwise spend in cleaning and grinding.

## Use the Multiple to start your Tractor

### You Will Save

infinite time, a heap of hard labor and considerable money if you use the NORTH STAR MULTIPLE to start your machinery. It is compact, positively certain in its results, and absolutely moisture-proof. It is provided with a convenient handle for carrying. Only two trifling connections to make and it is ready for business.

Sold Where All First Class Goods Are Sold

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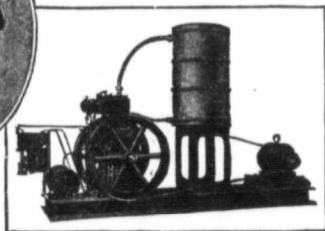


## Lister-Bruston Automatic Electric Lighting Plants

The exclusive automatic features of the Lister-Bruston make it the simplest, most economical and efficient means of producing electric light. Simply switching the lights on or off starts or stops the engine. All the attention the plant requires is the provision of fuel and oil. Made in 14 sizes—from 40 to 1500 lights—it is suitable for every purpose from farm to municipal lighting.



WRITE FOR CATALOGUES



**R. A. Lister & Co. (Canada) Limited**  
WINNIPEG

Is not Twelve Times the Contents of this issue Worth the Subscriber's price for a year of the Canadian Thresherman and Farmer—\$1.50—or \$2.00 for two years?

## SHEEP—PAST AND PRESENT

By C. F. MacKenzie, B.S.A.

THE pioneers, who hewed out homes in the forest, always had a small flock of sheep to supply meat for their tables and wool for their clothing. While sheep raising is one of the oldest of the live stock industries in Canada, yet, it has received less attention than any other. The reason being that a large number of people erroneously imagine, that sheep require no attention or care.

These people allowed their flocks to shift for themselves, with the result that the animals degenerated through neglect and their owners soon lost the flock entirely, or got disgusted and quit.

Thus, while Canada is admirably adapted for sheep raising, the industry has gradually decreased, instead of growing. All other classes of live stock have increased throughout Canada, but the sheep industry has grown less and less.

The low prices for mutton and wool that prevailed for many

years hindered the sheep-raising business. Even those men who took fairly good care of their sheep grew discouraged. However, during the past few years, with the increased prices for mutton, and the grading and co-operative selling of wool, together with a big increase in wool prices, the sheep industry in Canada has been increasing fairly rapidly. Not only do we find many more men going into the business, but all sheep raisers are taking better care of their flock. Thus, better quality lambs are being marketed and the quality of the wool is getting better each year. Farmers are beginning to realize that their sheep give them as good returns for the money invested as any other class of animals they handle.

Sheep on the farms are of great value in keeping down all varieties of weeds. There is, perhaps, no weed that sheep will not clean up. On farms where sheep are kept weeds get very little chance to grow. We would not recommend, however, that the flock be depended on to keep the farm clean and live on weeds. This would be foolish and entirely out of keeping with good farming methods.

At this season of the year the lambs should be separated from the rest of the flock. Good pasture should be provided, in order that they may be in good condition to market later. Clover or rape is very suitable, but care must be exercised in getting them accustomed to the rape, especially.

They should not be turned into a field of rape that is wet. Neither should they be hungry when they first go into the field. In either case they are almost sure to suffer from bloating.

They should have some other pasture to run in besides the rape field. If pasture is not abundant, a small allowance of grain should be fed, especially if your lambs are to be marketed in October.

The ewe lambs from good, prolific mothers should be marked, providing they are well developed. These will go to fill the places of older ewes, who, perhaps, have gone bad in their udders or have not sufficient teeth to carry them over the winter. Many people advise to keep the ewe lambs over, not breeding them till they are a year old. This is a point that must be decided by the owner of the sheep. If lambs are fed well during the fall, and are well developed, they very often will raise as good lambs as matured sheep.

The lambs need to be kept free of burrs and dirt, even if you are going to market them. Gather up the burdocks and other burry weeds that are in the fields before allowing the flock to have free access to it.

# GRAIN SAVING STACKER



View looking into hopper, showing grain trap near stacker fan; also auger running from beneath trap for returning the saved grain to separator.

## Adopted by Canadian and United States Threshing Machine Manufacturers

**T**HE Grain-Saving Stacker is the most important improvement in threshing machines developed in the last quarter of a century. It is designed to save kernels which are wasted by faulty adjustments of the sieves, improper regulation of the blast, undue speed variation, climatic conditions, or careless feeding.

*The Grain-Saving Stacker positively prevents waste of grain due to these or other causes.* For this reason it is now being made regular equipment on the standard threshers in Canada and the United States.

Because of the unlimited capacity of the Grain-Saving Stacker the threshing machine can be crowded to the limit, with

the assurance that the grain will go into the sack and not the stack.

The manufacturers of North America's standard threshing machines named below are prepared to furnish machines equipped with the Grain-Saving Stacker. Full information will be given you by any in this list, many of whom you will recognize as the manufacturers of the best-known tractors and farm implements. Write any of these for descriptive circular.

### List of Manufacturers

**Canada**  
 Robt. Bell Engine & Thresher Co., Ltd.,  
 Seaford, Ont.  
 Dominion Thresher Co., Ltd., New Hamburg, Ont.  
 Ernst Bros. Co., Ltd., Mt. Forest, Ont.  
 John Goodison Thresher Co., Ltd., Sarnia, Ont.  
 Hergott Bros., Ltd., Mildmay, Ont.  
 Macdonald Thresher Co., Ltd., Stratford, Ont.  
 Sawyer-Massey Co., Ltd., Hamilton, Ont.  
 Stewart Sheaf Leader Co., Ltd., Winnipeg, Man.  
 Sussex Mfg. Company, Ltd., Sussex, N. B.  
 Waterloo Mfg. Company, Ltd., Waterloo, Ont.  
 R. Watt Machine Works, Ridgeway, Ont.  
 George White & Sons Co., Ltd., London, Ont.

**United States**  
 Aultman & Taylor Machinery Co., Mansfield, O.  
 Avery Company, Peoria, Ill.  
 A. D. Baker Company, Swanton, O.  
 Banting Manufacturing Company, Toledo, O.  
 Batavia Machine Company, Batavia, N. Y.  
 Buffalo Pitts Company, Buffalo, N. Y.  
 Cape Mfg. Co., Cape Girardeau, Mo.  
 J. I. Case Threshing Machine Co., Racine, Wis.  
 Clark Machine Company, St. Johnsville, N. Y.  
 Ella-Keystone Agricultural Works, Pottstown, Pa.  
 Emerson-Brantingham Co., Rockford, Ill.  
 Farmers Independent Thresher Co., Springfield, Ill.

A. B. Farquhar Co., York, Pa.  
 Frick Company, Waynesboro, Pa.  
 Harrison Machine Works, Belleville, Ill.  
 Huber Mfg. Company, Marion, O.  
 Keck-Gonnerman Company, Mt. Vernon, Ind.  
 Minneapolis Threshing Machine Company,  
 Hopkins, Minn.  
 Port Huron Engine & Thresher Co.,  
 Port Huron, Mich.  
 The Russell & Company, Massillon, O.  
 Russell Wind Stacker Company, Indianapolis, Ind.  
 Sawyer-Massey Co., Ltd., (U. S. Agency) Moline, Ill.  
 Swayne, Robinson & Company, Richmond, Ind.  
 The Westinghouse Co., Schenectady, N. Y.

**The Grain-Saving Device Originated with The Indiana Manufacturing Co., Indianapolis, Ind., Who Also Originated the Wind Stacker**

# Fires Break Out

and thieves break in. Don't risk the first, or invite the second, by keeping money in the house.



Put it in The Merchants Bank, where it will be safe from loss—always available—and earn interest at highest current rates.

## THE MERCHANTS BANK

Head Office: Montreal OF CANADA Established 1864.

With its 27 Branches in Manitoba, 41 Branches in Saskatchewan, 69 Branches in Alberta, 8 Branches in British Columbia, 119 Branches in Ontario, 37 Branches in Quebec, 1 Branch in New Brunswick and 2 Branches in Nova Scotia serves Rural Canada most effectively.

WRITE OR CALL AT NEAREST BRANCH.



## A "Northland Brand"

Sweater Coat for these cool evenings is just the thing.

SELECT ONE FROM YOUR DEALER TO-DAY

Sold at all Good Stores

No. 715—Shown in the following Fleasing Shades:

- Nile and Roman Stripe
- Tulip and Roman Stripe
- Paddy and Roman Stripe
- Rose and Roman Stripe



Northland Knitting Co. Limited, Winnipeg

MANUFACTURERS OF SWEATERS, MITTS, GLOVES AND MOCCASINS FOR MEN, WOMEN AND CHILDREN.

In selecting the ewe lambs to reinforce your flock, care should be taken that you are as particular about type as in any other class of live stock. Only those lambs that are well-developed, typy individuals should be kept. The scrub is just as dangerous to the sheep breeder as he is to the horse man or cattle breeder.

This is a good time of the year to purchase ewes for breeding purposes. Their qualities of endurance and strength, as well as the milking powers can be ascertained. Besides, by getting them now you are able to give them a little special care, in order to fit them for the breeding season.

Sheep raising is a paying proposition and is bound to become more highly specialized than it has been in the past. Prices will be good for some time to come, according to the present outlook.

More farmers should go into sheep. Give them proper attention and the investment will be a paying one.

### "INDUSTRY IS NOT A MECHANISM"

"WE must begin, as all serious reform must always begin, by an act of renunciation," says the Nation. "And what we are called on to renounce is evident from the nature of the principles which it is our duty to apply. We must renounce the conception of economic efficiency as the end and arbiter of industrial organization. We must cease to judge industry merely by its productivity, in order that we may begin to judge it by principles the validity of which we all recognize, but which we exclude from our industrial organization, because we are dazzled by the brilliance of its material achievements, and ignore the right of the human beings by whom those achievements are made possible.

"Is not a good deal of the talk about reconstruction based on the idea that if a nation produces

1,000 units where it formerly produced 100, and 10,000 where it formerly produced 1,000 it is somehow nearer some kind of social reorganization? It is not merely a matter of class interests. It is a philosophy of which we are all the votaries. And it is an illusion. It is an illusion because it is evident that the productiveness of industry has increased a thousandfold in the last fifty years, and that the burden of men's complaint against it is not that it is ineffective, but that their rights as human beings are sacrificed to it.

"Industry is not a mechanism. It is the association of men to win a living from Nature 'for the glory of God and the relief of man's estate,' an association in which covetousness is covetous, brutality is brutal, tyranny is tyrannical, in precisely the same sense and to precisely the same degree as they are in the affairs of a State or a family, and which men are bound to judge by exactly the same standards of morality as they apply to the rest of human affairs.

"Must we not renounce the ideal of economic efficiency in order to make possible a constitution of industry based on the idea of right, just as, in order to make possible a constitution of the world on the basis of international right, nations must renounce the exclusive pursuit of national power?"

Corkscrews have sunk more men than cork-jackets will ever save.

## KITCHEN'S "Railroad Signal" OVERALLS

Noted for completeness of service. Plenty of pockets. Buttons can't wear off. Double and triple stitching where wear comes. Easy to slip on and off. Outwear all others. Ask your dealer for "Kitchen's," and insist on having our "Railroad Signal" brand

The Kitchen Overall and Shirt Company, Limited Brantford, Ont. 45

Union Made



PRACTICAL LUBRICATION

(Continued from Page 12)

properly lubricated, and so obtaining the maximum resiliency of the springs, easier running is ensured.

Get the Right Oil

There are, and always will be, some people who think that anything sold in an oil drum is sure to be good enough for lubricating any or every part of their vehicles, at the same time wondering at the cost of repairs. Though a cheap brand may appear to the uninitiated to be equally as good as a more expensive oil, the inexperienced should be on their guard against the former and should not buy it just because one gets more for one's money. An oil of poor quality loses its viscosity after a very short time, becoming thin and almost useless as a lubricant; it also contains a certain amount of foreign matter that will shorten the life of any bearing by scoring the surface or blocking the oil ways. It can be understood, therefore, that the small extra cost of a high grade oil is practically negligible when compared with the longer service obtained by its help. Most manufacturers specify the makes of oil that are most suitable for their particular vehicles, and, unless the user has a special knowledge, it is folly for him to imagine that he will get as good results with any others. Any endeavor to cut down expenses in that way will be nullified by an augmented repair bill.

The Engine First

The lubrication of the engine ought, of course, to hold first place, and it is here that rule-of-thumb methods must give way to care and forethought. It is the usual practice nowadays to force oil to the main bearings by means of a gear or plunger pump, driven by the engine, and this also in some makes distributes oil to the cylinder walls. The big-end bearings can be lubricated in two ways: by their splashing in a trough or through a duct in the crankshaft leading to the journals. In the former case, the troughs are kept supplied by a delivery pipe fixed inside the crank case. Both methods depend upon a perfectly clean oil; otherwise the ducts may become choked. To ensure that the pump shall deliver such oil, a fine gauze filter is fitted round the intake port of the pump. Any dirt or flakes of metal that may collect in the sump, whence the oil is usually drawn, are thus prevented from entering the system.

Oil Must be Filtered

Though it is common knowledge that a filter should be used when oil is being poured into an engine, it is equally well known

that the bad practice of piercing the gauze, if one happens to be in the way, is rampant amongst those who can never find time to do a job properly. Any vehicle that may not be fitted with a gauze in the oil filler ought certainly to be supplied with a conveniently shaped funnel containing one—about fifty to the inch is a suitable mesh. It would seem probable that, if no dirt or dust could enter the interior of the engine, the oil would remain clean and serviceable for a long time, but it is remarkable how soon the filter under the pump becomes clogged with fluff, carbon, etc., sometimes to such an extent that no oil can pass through. A big-end bearing run out, or a seized engine, is naturally the unfortunate result. The cost of repairing such a serious breakdown cannot be borne by the usual maintenance charges any more than can a collision, as it is an item that should not occur. To avoid such extra expense, then, one has recourse to a very simple remedy. This is to remove and clean the pump filter at regular intervals, the length of which can best be determined by experiment. Some types foul up more quickly than others, the time varying between a week and a month. On some makes of vehicle the filters are very accessible, while on others it is necessary to drop the tray under the engine and remove it from below, or even in a few cases first to take down the base of the crank chamber. In the event of the oil in the sump being allowed to run out upon removal of the filter, it should be collected in a clean vessel, so that it can be used again. If it is found to be too thin for further service in the engine, it will at least be suitable for the machine shop (for use on drills or cutting tools of any kind) or for artificers' oilcans.

In the Engine Base Chamber

The question of how much oil ought to be put into an engine is generally passed off with the simple phrase, common to most lubrication diagrams, "Fill engine base with oil up to the level of the tap." The instruction would suffice if the vehicle never left its garage, but there are occasions when one has to replenish the engine oil while on the road. There are then two things requiring attention, which, though self-evident, are sometimes neglected. The vehicle should be as level as possible, otherwise too much or too little oil will be put in, according to the direction of the slope. The overflow tap should be kept clean, especially on those vehicles that are not fitted with trays. It is quite easy for the taps to become stopped up with mud, in which case the driver is liable to

# DON'T THROW

## Your Old Tires Away

Have Them  
**RETREADED**  
BY THE  
**EATON**  
**BUILT-UP PROCESS**  
They Will Give  
An Additional  
**3,000 MILES**  
**OF SERVICE**

If the canvas is not loose or there is not more than one blow-out in the casing your old tires can be retreaded to give an additional service of 3,000 miles.

**THE TREAD IS MOULDED ON**

Most retreading is done by vulcanizing on a band that has a previously prepared tread. Our new BUILT-UP process moulds a tread out of pure gum rubber right on your old tire.

We pay shipping charges both ways on all tires that are retreaded.

CANVAS  
MUST  
NOT  
BE  
LOOSE



NOTE THE  
FINISHED  
TREAD  
YOU CAN  
HARDLY  
TELL  
THIS TIRE  
FROM A  
NEW ONE

FIVE COATS OF  
SPECIAL CEMENT

CUSHION RUBBER  
NEXT TO CANVAS

FIVE PLYS OF HEAVY  
TREAD RUBBER  
MOULDING

**SEE SCALE FOR SIZES AND PRICES**

No.	SIZE	PLAIN	Safety or Grooved Tread
A1	30 x 3 1/2	\$11.50	\$13.00
A2	32 x 3 1/2	12.50	14.50
A3	31 x 4	14.25	17.50
A4	32 x 4	15.50	18.50
A5	33 x 4	16.50	19.50
A6	34 x 4	17.50	21.00
Vulcanizing		3 1/2" case	\$5.50 per section
		4" case	6.00 per section

READ THIS—When sending tires, address plainly to the T. EATON Co. Ltd., Winnipeg. Also put sender's name on tag. Do not send tires that are loose in the canvas or that have more than one blow-out, as these can not be retreaded to give satisfaction.

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

be misled as to the quantity of oil the engine needs. A thick smoke issuing from the exhaust pipe passes unheeded, as the oil is "known" to be below the level of the tap.

On Priming

It is found that easier starting of some engines is obtained by priming the cylinders with petrol, but this practice should not be overdone, as liquid petrol will wash the cylinder walls clean of oil before automatic lubrication has had an opportunity to carry out its duties. There is a tendency on the part of most people when priming their engines to use a great deal too much petrol. Apart from the waste of fuel, the detri-

ment to the engine is not inconsiderable, especially so in the case of sleeve-valve engines, where the wearing surfaces are extensive and inaccessible to cold oil. If this method of starting is really necessary, a slight modification will lessen its harmfulness. Instead of using pure petrol, an equal mixture of that and thin oil will serve the purpose as well, and will at the same time keep the cylinder walls slightly lubricated until the splash or pump feed, as the case may be, comes into operation.

(To be concluded)

# OUR WOMEN FOLK

CONDUCTED BY  
PEARL RICHMOND HAMILTON

### GOD INACCESSIBLE

**W**HY do you make  
God inaccessible?  
Why do you shut him  
In prisons of stone?  
God with the lad's lips, child-eyes,  
Laughter, woodlands-wild-eyes,  
Why do you take  
God from the greenfield-places?  
Why do you set poor God alone  
To shiver all day on a throne of stone  
In front of the pale-fool-faces?  
Bring him back to us  
Out of the purple  
Sonorous pomposities.  
Oh how you deafen him daily  
With set appropriate phrases!  
Let him return to us gaily,  
Come by the river-side track to us

Where lads strip and stand.  
Louis Goulding, in the Cambridge Magazine.

### "WHEN I SIT UNDER A GREEN TREE"

**W**HEN I sit under a green tree,  
Silent, and breathing all the while  
As easy as a sleeping child,  
And smiling with as soft a smile—  
Then, as my brains begin to work,  
This is the thought that comes to me:  
Were such a peace more often mine,  
I'd live as long as this green tree.  
—W. H. Davies, in Land and Water.

### THE WORLD WE LIVE IN

**M**R. HUSS, the schoolmaster, thus describes the world in which we live. He is to be found in Mr. H. G. Wells's new story, "The Undying Fire," now appearing in the International Review:

"Every baby in its mother's arms feels safe in a safe creation; every child in its home. Many men and women have lived and died happy in that illusion of security. But this war has torn away the veil of illusion from millions of men. . . ."

"Mankind is coming of age. We can see life at last for what it is and what it is not. Here we spin upon a ball of rock and nickel steel, upon which a film of water, a few score miles of air, lie like the bloom upon a plum. All about that ball is space unfathomable; all the suns and stars are mere grains of matter scattered through a vastness that is otherwise utterly void.

"To that thin bloom upon a particle we are confined; if we tunnel down into the earth, presently it is too hot for us to live; if we soar five miles into the air we freeze, the blood runs out of our vessels into our lungs, we die suffocated and choked with blood. . . ."

### NOT WELL DRESSED

**W**HEN I think of mankind, I must say I do not always think of well-dressed persons," said President Wilson in Paris. "Most persons are not well dressed. The heart of the world is under very plain jackets. The heart of the world is at very simple firesides. The heart of the world is in very humble circumstances; and unless you know the pressure of life in the humbler classes you know nothing of life whatever.

"Unless you know where the pinch comes, you do not know what the pulse has to stand, you do not know what strain the muscle has to bear, you do

not know what trial the nerve has to go through to hold on. To hold on when there is no glee in life is the hard thing.

### Not Specimens of Mankind

"Those of us who can sit sometimes at leisure and read pleasant books and think of the past, the long past, that we had not part in, and project the long future, we are not specimens of mankind. The specimens of mankind have not time to do that, and we must use our leisure when we have it to feel with them and think for them, so that we can translate their desires into facts, as far as that is possible, and see that most complicated and elusive of all things that we call justice is accomplished—an easy word to say, and a noble word upon the tongue, but one of the most difficult enterprises of the human spirit."

### "SHE WAS GREATER THAN ANY OF HER BOOKS"

Charlotte Bronte's Reply to a Critic—Her Lonely Life and Love Story

**W**HEN all is said and done and after many years of the closest study, I remain of opinion that Charlotte Bronte was one of the noblest women of whom we have any record. Her books are great. They are wrung out of her pure heart. They will not die. But she herself in her fortitude, in her patience, in her endless self-sacrifice, was greater than any of her books."

Sir W. Robertson Nicoll gave this judgment on Charlotte Bronte when he addressed the Bronte Society of Halifax as president.

He quoted the memorable reply which Charlotte Bronte sent to Anne Mozley—the only critic to whom she replied. Miss Mozley, in reviewing "Villette,"

had suggested that Charlotte Bronte, when "she first presented herself to the world" was—"sour, coarse and grumbling; an alien, it might seem, from society and amenable to none of its laws."

### The Only Survivor of Six

To this Charlotte Bronte replied: "Who my reviewer may be I know not, but I am convinced he is no narrow-minded or naturally unjust thinker. To him I would say no cause of seclusion such as he would imply has ever come near my thoughts, deeds, or life. It has not entered my experience. It has not crossed my observation.

"Providence so regulated my destiny that I was born and have been reared in the seclusion of a country parsonage. I have never been rich enough to go out into the world as a participator in its gaieties, though it early became my duty to leave home in order partly to diminish the many calls on a limited income. That income is lightened of claims in another sense now, for of a family of six I am the only survivor.

"My father is now in his seventy-seventh year; his mind is clear as it ever was, and he is not infirm, but he suffers from partial privation and threatened loss of sight; as his general health is also delicate, he cannot be left often or long; my place, consequently, is at home. These are reasons which make retirement a plain duty."

### Something Sweet in That Face

"There are two points about Charlotte Bronte which Miss Mozley selects with unerring skill," says Sir William.

"In the first place, she was one of those who have a peculiar claim for consideration and indulgence. There are those whose minds and bodies are not in harmony, where there is a lasting

discrepancy between the spirit and the mortal frame in which it may be truly said to be imprisoned. If the mind be masculine, victorious, active, keen, and the body feeble, nervous, suffering, and sinking always to its fall, the want of balance is apt to play strange tricks with the whole economy.

"I cannot believe that Richmond's portrait of Charlotte Bronte is the portrait of a plain woman. There is something sweet and appealing in that face. But that she was very delicate and greatly tried by weakness, insufficiently cared for, starved of her legitimate demands, there can be no doubt. And this is what has to be remembered in judging of her character.

### The Slave of Duty

"In the second place, no woman that ever lived was more unwersingly and touchingly the slave of duty. Duty meant to her chiefly loyalty to family affection and the ties of blood. Is there a rarer example of sisterly love than is to be found in Charlotte Bronte's life? Is there a rarer example of daughterly affection than her love to her father? Tremendous demands were made upon her loyalty, and yet it never faltered. There was about her what Miss Mozley ventures to call a narrow and shortsighted sense of duty. She says that her useless, fruitless self-sacrifices were among the most important lessons and warnings of her life.

"One does not wish to say anything unkind about old Patrick Bronte, but he seems to have allowed nothing to alter his way. He sends four daughters to one school, and two of them died from causes connected with the school. He goes on sending the other two, and it does not occur to him to change his plan. His house and its situation prove unhealthy, but there is no thought of a change. His servant becomes incapable, but there is no thought of replacing her. He begins capriciously to dine alone, and dines alone to the end of his days, until there is no one left to share his meals.

### A Tragic Household

"Branwell destroys the health of mind and body of his sisters, but no one thinks of putting him under salutary restraint. The daughters die one by one in consequence of this system of blind acquiescence. The remaining daughter struggles on, and when a lover appears her father violently opposes himself to her marriage, for no other reason than that it threatened a change.

"She craved for support and companionship, and they were denied her. Her rigid, restricted notion of duty was a sort of heathen god to her and held her down. All her life she shuddered at death. She lived in a churchyard. She could not as a girl walk over a grave unawares without turning faint. The loss of acquaintances made a ghastly void which she feared to think of. When she did marry, after many difficulties, her husband had to remain at Harworth to work with her helpless old father.

"Charlotte Bronte lived for her family—her father, her sisters, her brother, her servants. She would suffer nothing to shake the supremacy of her home duties, and almost denied herself the consolation of friendship. But her heroines have no tie to home or family. They are able to choose and shape their destinies; they enter the world free, and yet with qualities of culture and feeling that brings to them at last the full investiture of life through love."

### Charlotte's Love Story

"The great love problem of Charlotte Bronte's life is just hinted at by Miss



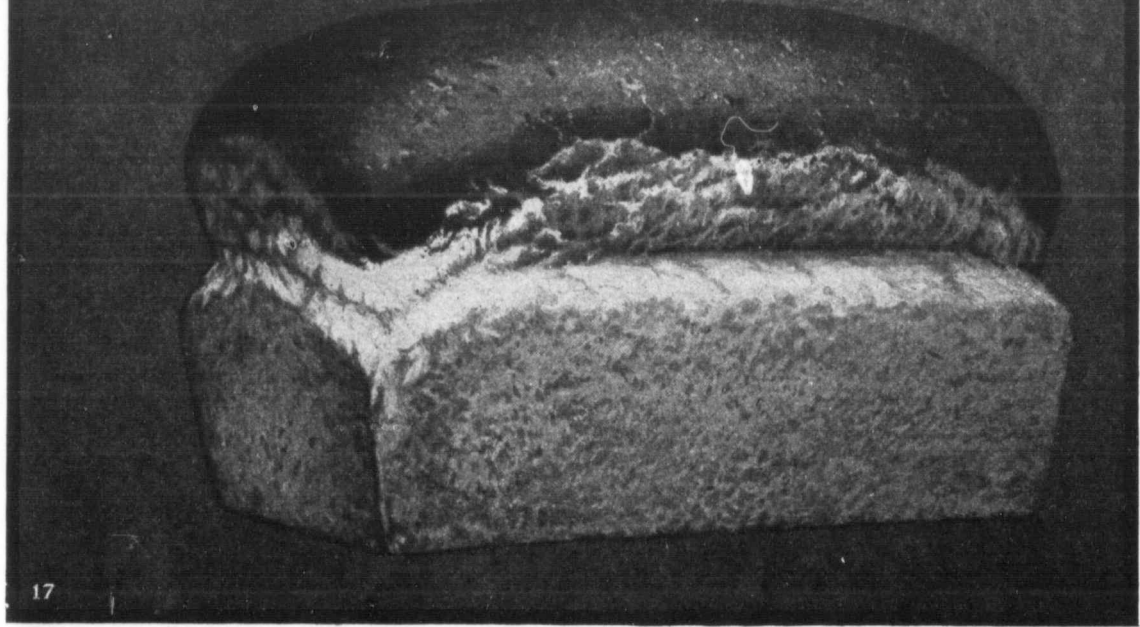
THE LUCKY RICH—A HIGH PRIESTESS OF SNOBBERY

Poor Relative: "They are splendid fowls. Do they lay well?"  
Mrs. Snobson: O, they can lay beautifully; but of course in our position they don't have to."



# PURITY FLOUR

More Bread and Better Bread"



17

Mozley. I refer, of course, to her feelings towards M. Heger, her teacher in Brussels. Miss Mozley could not do more, for Charlotte Bronte's husband for some months and M. Heger—the Brussels professor who won her whole heart and wakened up her genius—were both alive.

"I have always held that Charlotte Bronte was in love with M. Heger, and this I believe was made sure by the publication of her letters to him. They will be found in my friend Mr. Clement Shorter's inestimable volume now published by Messrs Dent.

"Love is a word of all work, and applies to very different emotions. But to M. Heger Charlotte Bronte's heart was given completely. Before she met him her intellect, her genius, remained practically dormant. Under him it rose and flourished and glowed. I remember, more than thirty years ago, talking with Martha Brown, the nurse, who was with Charlotte Bronte when she died. Martha Brown told me that before Miss Bronte accepted Mr. Nicholls she would go into the kitchen evening after evening and

say, 'Martha, do you think it right for a woman to marry a man whom she esteems and respects, a man who truly loves her, even though she does not love him?'

"M. Heger was the man responsible for her soul's awakening—the only man who ever really won her, the man on whom her thoughts were continually centred."

The full text of Sir Robertson Nicoll's address is given in the British Weekly, March 13.

**TRANSPORTS OF JOY**

A soldier home on leave was trying to give his friends an idea of the amount of mud in the trenches.

"One day," he stated, "I dropped my cap, which disappeared in the mud. I was floundering about looking for it when a voice cried, 'Hi! Look out, you're standing on my hand.'"

"What do you want to lie about there for?" I asked.

"Lie about be hanged," was the reply, "I'm driving a transport."

Teacher—"Do you know that George Washington never told a lie?"  
Smart Boy—"We don't know it, sir; we've only heard that he didn't."



"Don't you think we ought to hang the Kaiser, Mrs. 'Arris?"  
"It ain't the Kaiser I'm worrying about—it's the bloke wot interjuiced this war-bacon."

**A STRANGE WORLD**  
Harassed Decorator: "I'm very sorry, mum, I 'aven't been able to paper your two top bedrooms. They took away my last man a week ago for the army. Seems to me they think more of this 'ere war than they do of paper 'anging."

**A SLEEPING PARTNER**  
"What your husband needs, madam, is rest. I shall prescribe a sleeping draught."  
"Very good, doctor. And when should I give it to him?"  
"I don't propose that you should give it to him at all, madam. You will please take it yourself."

**THE NEW GRAND TOUR**  
Two American soldiers were engaged in trench digging, when one asked the other if he remembered the big posters back home saying, "Enlist and see the world."  
"Yes," replied his companion. "But why?"  
"Well, I didn't know we had to dig clear through it in order to see it."



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**It Makes Dandy Candy**

THE CANADA STARCH CO., LIMITED,  
MONTREAL.

Write for Cook Book 239

## LILY WHITE CORN SYRUP

### THE TIME WE WASTE IN HURRYING

By Eva Thompson

AT pretty regular intervals we all receive bulletins from the Government warning us to watch for bugs and flies and worms that are expected over from the United States to infest our crops and cattle, causing great damage thereby. We never get any warning of anything that might come over and bite us, though we find some typically American influences fast developing in Canada.

Take our pleasures alone. The average entertainment must now be something terribly swift or noisy. Everybody seems to have been bitten with the speed bug and it has turned a nation into Barney Oldfields. Nothing is pleasure that moves slowly. Pleasure must be taken very swiftly to be entertained in this age.

To enjoy a drive you must have something with an engine, then you pin back your ears, open the throttle and let it go to the limit. If you can get up speed enough to make the fence posts look like a picket fence then the scenery is sublime. Go as far as you can and then turn around and tear back. "A perfectly lovely drive, did eighty miles in the afternoon. Where did we go? Why really, I hardly know, only we bursted a tire in Clatham; had to stop there." They got nothing out of the afternoon to remember only the sense of speed.

The other day I heard a lady laugh because a family drove to church in their democrat. Why is that so queer? It was a perfectly good democrat and they owned it, the horses were shining and plump, all were to church in plenty of time for service. The passengers all looked really comfortable and had no strained look of the speed mania in their faces. They looked peaceable because they had seen wind make a golden sea of wheat, a dog-wood tree in bloom so near that they could see the pink on

church, folded their hands and calmly enjoyed the service. Their nerves never jumped every time the minister turned and turned the leaves of his hymn book or kept them waiting an instant.

Nobody now really wants to walk. If they have to they can, if not they take a street car and brace their feet till they ache trying to push it along faster. Watch a busy street of people walk by. Half of them have a strained, hurried look on their faces and would make a greyhound pant to keep up with them. They are in such a hurry to get some place else to hurry on again. When they eat it must be in a crowd with a band playing as loud as the law will allow, then they can enjoy their food because for the time being they have stunned their nerves. A meal alone or in a quiet place is more than they can stand. Noise is dope. When they go to a park, the shore or a picnic, it must be in a big crowd. The quiet ones are too tame. There is nothing tame in a big crowd that pushes you this way and that, tramples on your corns and patent leather boots, picks your pocket, pokes an umbrella in your eye, carries off your lunch-box and steps on your camera. Something doing all the time! A lovely picnic and all come home fagged.

They are all in such a hurry to have a good time and they can't entertain themselves. They have to pay someone else to do it. So we have movie plays, something new every day and nothing like that everlasting old Shakespeare and Uncle Tom's Cabin that used to come around once in so often. Other-wise men build Electric Park and take you rolly-coasting a mile a minute over Bump-the-Bumps till your heart stops beating; up in balloons and wheels till the girls scream, anything to give your nerves something to make them jump. Others put Jazz bands into restaurants and charge for the agony. While others take a mortgage on the ocean and make you believe that only at that given paid-for point can you see or touch the salt

the petal tips, a bluebird hop and hop along the fence posts ahead of them, a neighbor dog chase a puffed-up cat to a tree, the blue haze along the woods, the brightening face of the little English boy they overtook and gave a ride, besides a hundred other little unremembered pleasant things. They went into water. "See the crowds that go, it must be a wonderful piece."

Why should we not be able to entertain ourselves at least nine-tenths of the time? The uncanned pleasures are so much more pleasant and lasting. Besides you don't have to work so hard for them. There is no Sunday, no Christmas, no Thanksgiving anymore, all have been turned into holidays. They are all spent the same way in tearing around trying to pay someone to amuse you. A fast train, boat or motor, a long journey, dusty distance covered, a queer meal to the tune of zip, zip, zippy, zip!, a play where the people move even faster than is possible in real life, swift ride home and Christmas is over. You don't even remember whether it snowed or not. I wonder how many old Christmas ghosts have turned over in agony these last five years.

What are ye hurrying so for anyway? We got no farther on our way and do less, enjoy ourselves less and put our nerves out of gear so we have to dope them with tobacco and excitement.

When we farmers see another pushing his horses we don't say, "My, what a hustler," but we generally remark that there is a fellow who seems to be behind with his work. It so often happens that the slow people are just going up the steps when the bell rings, while those that rush are rushing around the corner a block away. We like to remember, too, that the so-called slow English went into battle in four days and it took the hustling U. S. A. four years.

Tramp—"Madam, I was not always this."

Madam—"No. It was your other arm you had in a sling yesterday."

### BAPTISED BY INSTALMENTS.

CHARLES Lamb wrote about an angel's gossiping. I know very little about angels; in our village the folks are so continually rushing in that the angels never really get a chance. No doubt they 'have to keep themselves to themselves,' as local wisdom hath it.

"But we have done remarkably well with gipsies' christenings lately, and very pretty little affairs they are," says a writer in the Glasgow Herald.

"This most encouraging renewal of the faith (it never became quite a revival) amongst the gipsies was due to Mr. Piper, our late dear curate. (He's not dead, but gone to another parish.) How we all missed Mr. Piper!

Dear Mr. Piper

"His thin classic face, mild blue eyes with their far-away expression, and sweet voice never known to be raised in anger! We all adored him. Some of us wanted to 'mother' him; others wanted to marry him. If he had a fault—and I deny that he had—it was his absent-mindedness. And his memory was of the shortest. There were times when he seemed miles and miles away—'gathering flowers in heaven,' as one of our maiden ladies poetically phrased it.

"He had a kind word for everybody—even the gipsies who live on Bleakley Heath. I believe they were as fond of him as any of us. He would go and chat with them, and pat the children on their tousled heads just as if they were not a bit dangerous. Probably they all looked upon him as a kind of inspired child.

"Perhaps it is only fair to admit that he was not really a success as a business man. But what would you? Business men seldom have the wisdom of babes. The accounts when he left were found to be a deplorable muddle. In fact, there was no money in hand to carry on with—he had given so much away during his regime. A financial expert will have to be called in to devise a means

# EATON'S

## FALL AND WINTER CATALOGUE



# IT'S READY

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 WINNIPEG CANADA

of lighting and heating us during the coming winter months on a balance of nothing and several outstanding debts. Should a millionaire read this, perhaps he will come over and help us.

"In the meantime Miss Snippet is doing her best to raise money by jumble sales and work meetings. Miss Snippet ought perhaps to have kept a sharper eye on him.

"We never have any gipsy christenings now, Miss," Tommy Binks lamented a few weeks after Mr. Piper's departure. The entire Sunday school had looked forward to 'Christening Sunday' hitherto. The Romanies decked themselves out so royally for these occasions. And during the last month of Mr. Piper's ministry there had been three gipsy christenings. To one of these babies—the male issue of Mrs. Gobey—Miss Snippet had stood godmother.

"The new curate could not be persuaded—even by Miss Snippet—to take any interest in the gipsies. His methods were entirely different from Mr. Piper's, and he was a keen business man. So with a sad heart Miss Snippet determined to go herself and see Mrs. Gobey. The mother of Charles Alfred must be encouraged. Was not the baby's name on the parish register? And had she not a god-maternal duty towards him? Glancing at the latest page in the register, she noticed there was also a William Haig Gobey, and likewise a Benjamin Amos Gobey.

It Was Like This  
"Mrs. Gobey was delighted. Your true gipsy can dispense a royal hospitality to strangers. Charles Alfred was doing well. Miss Snippet dandled him. She was not an expert dandler, but she had picked up the rudiments of dandling from Mr. Piper.

"And William Haig," she asked; 'is he a little cousin?'

"Oh, no, Miss," explained Mrs. Gobey; 'this be William Haig.'

"But I thought this was, er, Charles Alfred?"  
"Pless yer, Miss, so 'e be, and 'e be William Haig and Benjamin Amos too. You see, it was like this. Mr. Piper 'e do be so fond of 'em that 'e always give us a shillin' each time we took a baby for baptisin'. So I took this little un three times, I did. Mr. Piper was so absent like that I do believe I could 'ave taken 'im twenty times and 'e not notice. Yes, Miss, Charles Alfred William Haig Benjamin Amos is 'is name, and 'e was baptised, as me 'usband do say, by instalments."

#### CARE OF THE TEETH

##### From "Conservation"

IT is a peculiar physiological fact that at birth the jaw contains the already calcified crowns of the temporary teeth and also that of the first molar of the permanent set. This fact alone is sufficient to direct attention to the care with which the mother should diet herself during the prenatal period.

The next interesting physiological fact is that, at the age of six years, the child has a greater number of teeth than at any other age, there being then the milk set and all the permanent set except the wisdom teeth.

To ensure that both sets of teeth shall be normal and healthy it is essential that there be most careful feeding of the infant and child, for any condition causing malnutrition will interfere with the proper formation of the cap of dentine and permanent defects will result. Defective dentition causes the teeth quickly to become carious after being out.

The health of the child requires that the temporary set should be sound, otherwise it cannot properly perform the process of mastication. The lowering of the vital functions of the child reacts on the permanent set of teeth and too often they reach the surface in a diseased condition.

It will not do to feed the baby on patent foods, cabbage, fried fish, etc., the same food that the parents eat, as it ruins the digestive apparatus and results in bad teeth. It is a fact that children's first teeth decay soon after they appear and, from growing beside the bad first teeth, the second set decay too.



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"THE STANDARD OF EXCELLENCE"

It is therefore essential that proper attention be given to the careful and systematic cleaning of the teeth night and morning. Indeed the mother should anticipate trouble by a careful wiping of the child's mouth before the teeth appear, using either a solution of boracic acid or of salt. With the appearance of the teeth a soft brush should be used in place of the clean linen wipe.

As all decay begins on the outside of the tooth and works inwards and no pain is complained of until the decay gets near to or actually reaches the live part of the centre of the tooth, parents should systematically examine their children's teeth and, thus, by early dental treatment, save the live part of the teeth, remembering that treatment is necessary although there may be no toothache with the decay.

As to the decay of teeth, matter forms and, in most instances, passes into the digestive tract. This poisons the system—in adult life a similar condition occurs in pyorrhoea and, as a result, debilitating diseases follow.

We should therefore resort to preventive measures in the care of the

teeth—give the teeth work to do, keep them clean and continue with systematic dental supervision.

Twenty-five per cent of the diseases of adults are traceable to the teeth.

#### WHAT DOES PEACE MEAN TO YOU?

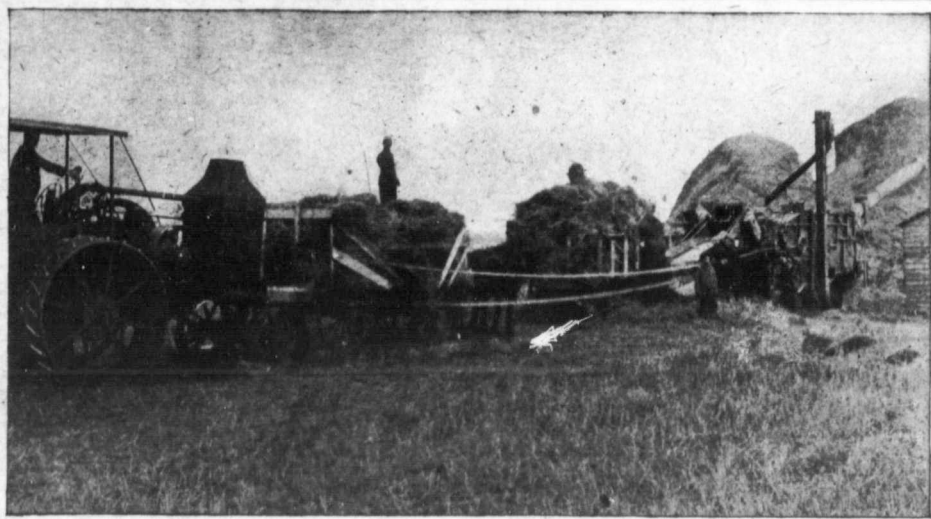
By Captain F. Bushfield, Editor of "The Threshold," the Little House Organ of the Manitoba Military Hospital, Toronto.

THE great celebration of peace has come and gone, this peace that we have been fighting, longing and praying for the last five years. July nineteenth was supposed to be a day for the people of the world to express their happiness and thankfulness that peace had come. Yet peace does not come by a mere proclamation. Peace is not made by agreements and laws. Peace is an attitude which creates an atmosphere, and this atmosphere affects everyone who lives in it.

What were the intentions and desires of those who declared peace? Did some of the defeated say, "Oh, well, for the

present we are defeated so will have to submit, but in doing so we do not admit that we were wrong," or they might have admitted that they were wrong and that their only reason for war was to gain personal or national wealth. On the other hand, who are the conquerors, may be gloating over our prise—our conquered foes. The question is, What are we glad about? Simply that we defeated the Hun, or are we glad that the world has ceased to war, and that the great and awful struggle we have not only defeated a human enemy but we have striven to defeat that spirit, that attitude of the individual and nation that makes war necessary or possible.

As in war, so in peace. We have people in this world—even in Winnipeg—who could not see over the high fence of their prejudice. Even Irish Dublin joined in the celebration, but we have people in Canada who tried to obstruct our country in its effort to do its share in the war, and now we find the same class whining and sulking, like spoiled children, when they cannot have their own way. How important some people



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are in their own eyes. How serious they take themselves.

Then again there is that class which did its best to bleed this old suffering world for all the money and material wealth they could—even to making rotten shoes for the brave men who went to fight for them. The landlord who pushed up his rent on the soldier's widow and dependents. The miner or coal merchant who was willing to allow the poor to freeze to pad his pockets with unearned cash. The man who took the volunteer's position and who was not man enough to say to him when he came back, "Here you are, Mac. I have simply held it while you were fighting for me." The man who planned and schemed to prey on the loneliness of some soldier's wife to steal her trust and affections, simply to satisfy his beastly lust. These home-wreckers should be treated to a worse punishment than any Hun.

Again there is the mother and father who did their level best to keep their son or sons from doing their duty, or the young man who schemed and contrived to get out of enlisting. The young girl who was not faithful to her lover who had left all to do his larger duty and finds herself walking with a slacker.

Every true woman who walked the streets or parks on July nineteenth at the side of a man who had done or who had offered himself to his country in its time of need could be really glad. Yes, and even the one who had only the memory of a happy past could have that proud joy—that her lover, son or husband had done his noble part to bring this peace about.

What class are you in?  
It is very important for those who have given their all and who now have a broken body or an empty chair in their homes and an aching void in their hearts, that only eternity shall fill, to remember that the saying, "Whosoever loseth his life for My sake shall gain it," is as true today as ever. Those people who in life can only see their own selfish ends, and today have their sons and husbands with them, and also a good share of this world's goods which they would not have had if they had served as they should have, remember, only have their own little miserable, selfish selves to comfort them in the days to come, while every disabled soldier, every bereaved mother and every lone widow and orphan will have that proud joy that those of their kith and kin whom they loved greater than life thought not of themselves but of others, and therefore made the peace celebration of July nineteenth, one thousand nine hundred and nineteen, possible.

**SOME THINGS TOO GREAT FOR WORDS**

**T**HERE are some things that are too great for words. Do you remember how even Shakespeare, wanting to describe something once, could simply say, "Oh! wonderful, wonderful, and most wonderful wonderful! and yet again wonderful, and after that out of all hooping!"

"How often in these amazing days a man feels like that!" writes Arthur Mee in "Lloyds."

"Matter is doing the will of man—that is what we say as we look around the world, and it is astounding, surely! This little man, this mighty world, this speck of brain, this imponderable mass of six thousand million tons of matter! And yet this little man has taken matter, wherever he has found it, and done with it what he would.

**God Intervening**  
"If he has found it in the way of his railways, he has bored and run his railways through it; if he has found matter as a barrier in his path, he has blown it out. If he has found iron mixed up with other things he has taken it out and made it run like water till it was as pure as gold. If he has found coal down in the darkness of the earth he has brought it up and turned it into light. If his sugar harvest fails he will take a vegetable root and turn that into sugar; if that should fail he will get his sweetness out of coal. Marvel-

**Old Dutch Cleanser**

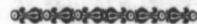
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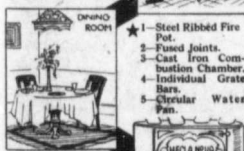
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lous, indeed, are the things that men are doing with matter.

"And yet the mind that can look ahead, the imagination that grasps the meaning of these things as Nature is unfolding her new powers, is startled and awed at times. If we were to wake up suddenly one morning to find that matter had become alive, to find that tables and chairs and pokers and walking sticks and fountain pens were thinking and talking with minds of their own; if we found on waking, as the clock strikes seven, that the old clock had known what was happening through all the years it has been ticking, would it be more uncanny, one wonders, than the things that matter does now?

**When Foch Intervened**

"Was anything in all the story of the war so astonishing as one thing at the end of it—a miracle that most men hardly noticed in the thrilling excitement of those great days? We talk of God intervening in the affairs of men, and so He does intervene.

"He intervened on that day last November when Marshal Foch wanted to speak to the men behind the German armies. Millions of men were fighting on two sides of a line. Towns and villages were being blown to bits, and men were dying like ants, or being mangled as by a car of Juggernaut. Then a moment came when one man's voice could stop the Great War of Europe, and what did Marshal Foch do then? He sent a message into space; he ordered matter, as it were, to do his will, and carry the message that would stop the war.

"Back from the depths of space the answer came, and we saw the most stupendous catalysis the earth has ever known ending in the most astounding conversation that has ever taken place between man and man. It was like the voice of Nature ordering war to cease; it was like Mind asserting its dominion over Matter. The human race had fallen to the depths, civilization had become a wild beast, and there was something noble and impressive in the thought that it was ending at last in this tremendous spectacle of Marshal Foch flinging out his fiat to the boundless ether."

**HATEFUL OR DELIGHTFUL?**

Professor Holden's System of Teaching Agriculture in Rural Schools.

By M. E. Kramer

DOWN in Missouri the country boys and girls are not casting about trying to find a reason for playing "hooky" these days. On the contrary the little red school-house is about the most popular resort in the neighborhood. This most remarkable change of sentiment on the part of the Missouri boy has taken place within the past few months—the question is, "What has brought it about?"

The leavening power that has created this change of attitude on the part of the schoolboy, is Prof. P. G. Holden's rotation plan for the teaching of agriculture in rural schools, which was adopted by the State last year. It is remarkable that the State of Missouri, hitherto famed for its propensities for "being shown" before advocating any new project, has thrown its shackles of convention to the winds and become the leader in a movement that will revolutionize the rural schools of our land. Missouri by this process vitalized not only her rural schools, but entire communities. Two hundred of the rural schools have set the pace for the remaining schools of the state, and for adjoining states.

Emerson is credited with the statement, "Let a man do anything better than any other man has done it, let it be but the making of a mouse-trap and the world will make a path to his door." This has proven true in the case of Professor Holden. Educators from all parts of the country are looking and travelling Chicagoward, in the hope of getting definite information regarding the new plan, while from far and near comes the Macedonian cry, "Come over and help us."

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- "Satisfaction"—dealing with McClary's Gas Traps.
- "McClary's Electrical Appliances"—on cooking with electricity.
- "Household Helper"—"Canning Edition"—describing McClary's Florence Automatic Oil Cook Stove.
- "The Story of a Range"—McClary's Simplex Combination Coal and Gas Range.

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And what is this rotation plan of vitalized agriculture?

Prof. Holden has long been recognized as an authority on things agricultural. He has for many years lamented the lack of a system of education in our rural schools which would teach a child in terms of his own life. For many, many years the tendency has been to educate the child away from the farm rather than teaching him the magnificent opportunity presented by the farm. At last we have the remedy—boys and girls trained under this new system of vitalized agriculture will not seek to leave the farm, but rather to grow and develop with it, and so redeem it from the destructive forces which have hitherto threatened it.

Two hundred schools of Missouri are now doing this work. Teachers in these schools have demonstrated the practicality of the work. Educators who have studied the plan are enthusiastic in its praise. Dr. Winship of Boston pronounces it the salvation of the rural school and community. H. S. Mobley, practical farmer, educator and lecturer, says of the movement:

"My general impression of the work is that it is wonderful in its conception and marvellous in its adaptation to our educational necessities. As I listened to Prof. Holden explain his scheme or plan for vitalized agriculture, I realized that where many had failed he had succeeded in formulating a method that would furnish the public school for the work of life. I could not repress the conviction that he was presenting the great necessary principle of which so many had felt the need and long had sought but failed to find. Yes, here it was before me, being explained and presented and carrying with it the demonstration that hereafter the vital things of life so necessary to us all when we come to deal with life for ourselves, could and would hereafter be given us through our public schools."

The plan briefly outlined is as follows: A rotation plan covering four years' work.

**First Year**—Farm crops; how seeds grow; depth to plant; corn; oats; alfalfa; weeds; gardens; canning; drying.

**Second Year**—Skaling things. Rope knots; splicing ropes; fly traps and screens; cement tanks; steps and posts; farm tools and posts; removing stains; sewing.

**Third Year**—Live things, animals. Diseases and remedies; how to feed; testing milk; poultry; useful birds; insect pests; preparing and cooking food.

**Fourth Year**—Soil and home; soil fertility; cultivation; moisture; sanitation; beautifying the home; social and community work.

It is not proposed that every teacher in the rural schools of the state shall begin the teaching of vitalized agriculture at the same time, but that the work shall be first presented by groups especially selected for this service.

Twelve or fifteen county superintendents, all of whom are live, wideawake educators, are selected by the State Superintendent of Public Instruction. These superintendents and teachers meet at a central point, where they are given special training in the manner of presenting the work. These special training schools are under the direct supervision of Prof. Holden.

By this new rotation plan the school work is new and interesting each year. It is not the old text-book repetition. Children are delighted with the work because it is actually "doing things"—they see the work developing under their hands. Whether it is selecting and testing seed corn or making a nail box, it is their work—the personal element and the pride of ownership increases the child's self-respect and efficiency.

Let us note what some of the teachers who have been doing the work in Missouri have to say regarding it:

"Vitalized agriculture to the boys and girls of my school has meant a vitalized school, for the children would not miss unless they were sick, because they were afraid they would miss something in agriculture. They were always willing to bring things from home whenever we needed them. When they were making their germination boxes (the ones where holes had to be bored in the

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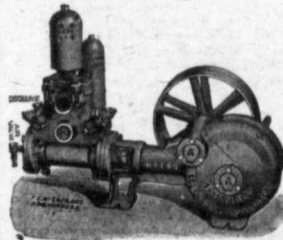
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Salted Kip Hides .35-.40	Wool .40-.45
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When General O'Neill, a well-known American general, went to inspect a camp, his train was three hours late. The negro escort appointed to receive him at the station had been dismissed. The general walked. Presently he was accosted by a sentry.

"Who is you?"

"General O'Neill."

"Well, you cut the buck and go up there to headquarters to beat de debbil and see my captain and explain yoself. We's been waitin' three hours for you."

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lumber), they were so interested in their work that they would come early in the morning and work before school, during the noon hour, and recesses. Then again when we were testing seed corn, not one of them came to school and said, 'I forgot to bring my corn.' They were always anxious to open the testers."

Another says: "One boy in my school has tested eighteen bushels, or enough corn to plant their entire acreage. Several others are doing likewise. Besides this other farmers of the district are testing their seed corn for the first time. Every one of the eleven agricultural students and some of the smaller pupils have tested corn for their fathers. The fourth grade children are continually asking if I thought they were going to pass, so that they could take agriculture next year."

From a Lexington, Missouri teacher: "Being one of the teachers of 'vitalized agriculture,' and one who war with you at Sedalia in August, I consider it my duty to write you of our work this year."

"We began our work, as you suggested, by studying corn and the method of determining the stand. We studied the work thoroughly; ruled our notebooks and went together into a field near the school-house to determine the stand there. Since then my eleven students have counted the stand at their own homes and that of others. We made a survey of all the farms in our district, finding the average loss to be about thirty per cent."

"We have done some work in weed study, and each pupil has collected and pressed what he considers ten of the worst weeds of the locality, and each has written a description of the weeds and the methods of eradicating them, in his note book."

"In canning, we have done quite a little. We have purchased an oil-stove with three burners and an oven. We have canned, at the school, 27 quarts of tomatoes, eleven quarts of beans and twenty quarts of apples and pears. We are not through yet, either. All the children, boys and girls alike, have canned something. Even the little boys and girls in the third and fourth grades have done some of it, and are very proud of the fact."

"After we have finished the canning we are going to use the stove in the preparation of hot lunches in schools. We shall also have a serving club for the girls."

One rural teacher makes this comment: "The change in my pupils in their ability to talk freely and well is one of the most marked results of our work in vitalized agriculture. Their spontaneous interest in the subject takes them out of their self-consciousness and gives them freedom. Then they are dealing with every-day things which they hear discussed at home: the stand of corn, the yield of oats and wheat, the worms, insects and plagues that attack these crops; the weeds that choke them out and how they may be killed. These subjects furnish the standard topics of table talk at home and the children have become used to discussing them without embarrassment. The campaign for this new line of teaching has more than justified itself in its influence upon the speaking and writing ability of our pupils. It has put new life into our language work, both oral and written."

The rotation plan for the teaching of vitalized agriculture is here to stay, expand and grow. Following the lead of Missouri, four additional states are to introduce the work the coming school year, namely, Oklahoma, Texas, Arkansas and South Dakota.

Professor Holden, the father of the idea, is the man who put Iowa "on the map" agriculturally—he increased the yield of corn in that state seventy-five per cent, and, incidentally, put millions of dollars into the hands of the farmers of the state. He established the department of agronomy, and installed the extension department in the Iowa State Agricultural College at Ames.

When the International Harvester Company decided to install an agricultural extension department, it looked westward, saw Holden, and straightway annexed him. To tell all that he has achieved during the years he has spent in the department would require too

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much space, but of his many achievements, no one can mean more to the people of the United States than this movement for the introduction of vitalized teaching into the rural schools. Through this agriculture, rural homes, communities will receive an impetus never before deemed possible. It is truly a movement of the people, by the people, for the people.

### CANADIAN BANKERS' COMPETITION FOR BOYS AND GIRLS

THE Minister of Agriculture has completed arrangements with the Canadian Bankers' Association to continue "The Canadian Bankers' Competitions" during the present year. In this competition, the Canadian Bankers' Association, acting in co-operation with the Dominion Department of Agriculture, Live Stock Branch, offers cash prizes to boys and girls who exhibit pigs or calves at their local fair, and who comply with all the rules governing the competition.

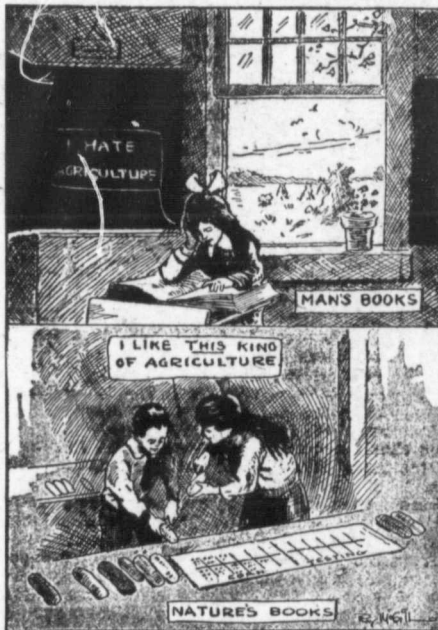
banks in the fair district shall, with the secretary of the fair, before applications are received, decide that the prizes shall be given to calves of beef type; and in districts where dairying stock predominates they shall decide, before applications are received that the prizes shall be given for calves of dairy type. If the management of the fair desires that there should be prizes for the type not selected it is suggested that the additional prizes be arranged for locally.

9. Exhibitors must feed and care for the animals they exhibit for at least six weeks. Whether in the case of calves the calf is fed from a pail or not makes no difference.

10. An application form and a certificate form are attached hereto.

(a) The application form must be properly filled out and filed with the bank manager of a local bank branch at least three weeks before the date of the fair.

(b) The certificate must be filled out and signed by the parent or guardian of the exhibitor, and filed with the secre-



The right and wrong way to teach agriculture in rural schools. We give this illustration by courtesy of the International Harvester Co.

In a district in which there is a school fair or a boys' and girls' club fair, the prizes shall be offered at such fair unless in the opinion of the managers of the banks in the district (to be ascertained by the bank earliest established in the district) the prizes should preferably be offered at the agricultural fair.

#### Rules

1. Only boys and girls who have not attained their 17th birthday before the opening day of the show are eligible to compete in the Canadian Bankers' Competition.
2. No entry fee will be charged.
3. No exhibitor shall be allowed to make more than one entry in a class.
4. Not more than one member of a family shall be allowed to compete in a class.
5. An exhibitor who wins a cash prize at one fair shall not be allowed to compete in the same class at another fair.
6. Calves and pigs entered for competition must have been born on or after March 15, 1918, and must be the property of the exhibitor or the exhibitor's parent or guardian.
7. Grade bull calves, and grade boars are not eligible to compete, and entries for same must not be accepted.
8. In districts where beef cattle predominates the branch managers of the

tary of the fair not later than the day of the competition. If, however, an exhibitor fails to present his certificate on the day of the competition, he shall be allowed to compete, but any prize he may win shall be withheld until a properly filled and signed certificate is produced, and said certificate must be forthcoming within forty-eight hours after the holding of the competition, otherwise his prize money shall be forfeited.

11. In case the winner of a prize is subsequently disqualified, each exhibitor below him shall be moved up one place.

12. The competition is divided into two classes: Class 1 for calves, pure bred and grade and class 2 for pigs, pure bred and grade in pairs. The prizes in each class range from five dollars for first prize to one dollar for fifth prize and a sixth reserve ribbon.

"Why did Joseph's brothers put him in the pit?" barked the teacher.

"Because he had a coat of many colors," suggested a bright lad. "And what has that got to do with it?" snapped back the teacher. "Well," again ventured the bright lad, "if he had had on a dress suit they might have put him in the stalls."

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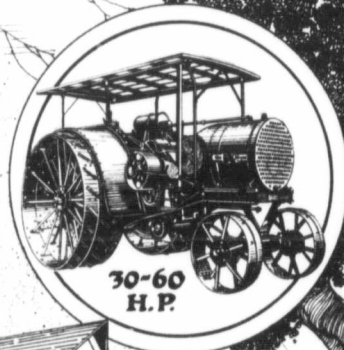
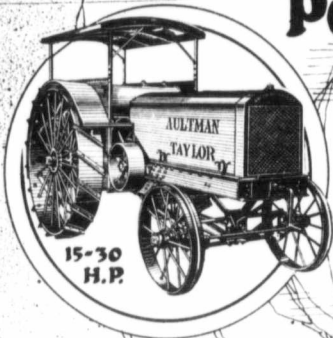
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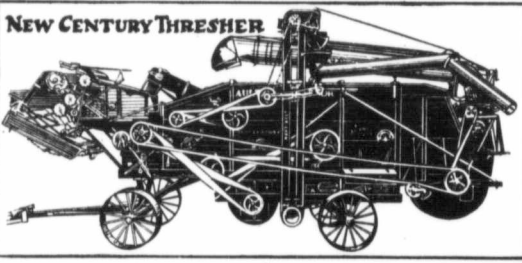
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