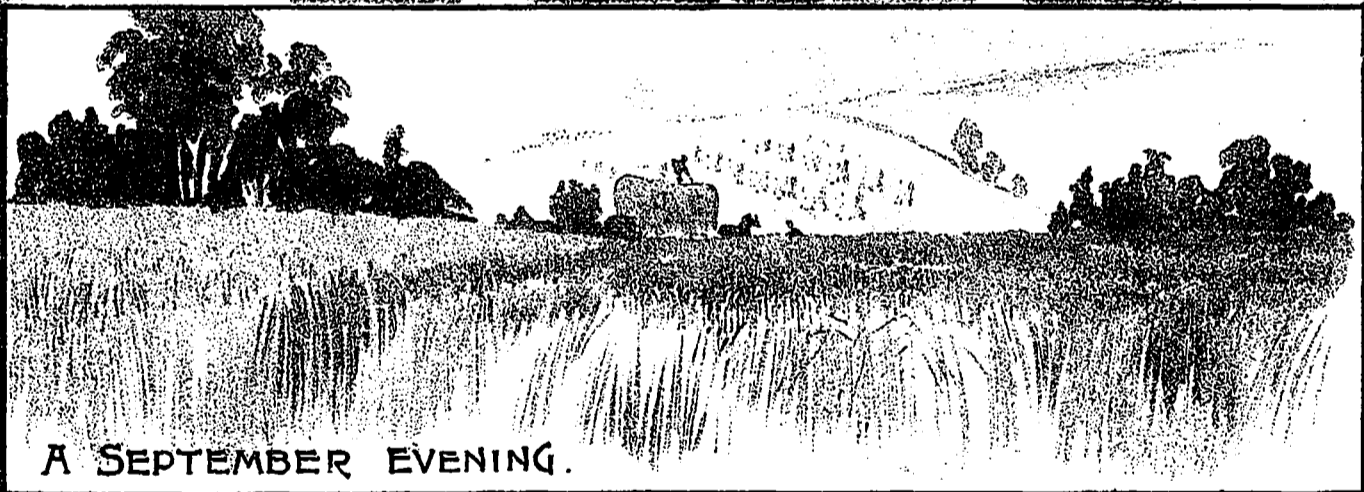


# MASSEY'S ILLUSTRATED

PUBLISHED MONTHLY

## Autumn Number.

SERIES. Vol. 2. No. 9.]



A SEPTEMBER EVENING.

SUBSCRIPTION PRICE, 50¢ PER ANNUM, 5¢ PER COPY.

TORONTO, SEPT. 1890.

FEATURES PECULIAR TO THE MASSEY-TORONTO MOWER.

# The Massey-Toronto Mower is the most Popular, 30,692 having already been sold and being now in actual use.



OVER A STONE—KNIFE IN FULL MOTION.

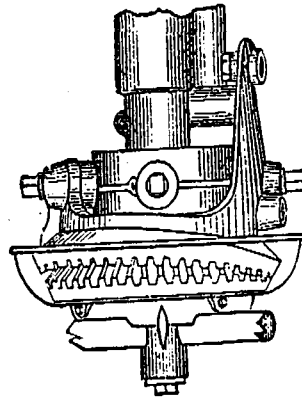
## SIMPLE.

The splendid driving mechanism used on the MASSEY-TORONTO Mower is one of the great inventions of this age. The wonderful differential gear which converts the rotary motion directly into reciprocal motion is a marvel to scientists in mechanics. Nothing more simple can be imagined, and at the same time never has been a more powerful driving mechanism discovered. Two cog wheels only constitute the device, and these but the size of a dinner plate.

## ELEVEN

of these cogs are in mesh at one time; other gears have three only.

We have yet to hear of a pair of these gears wearing out, though there are thousands of "Torontos" still in use which have now cut from eleven to thirteen seasons. What other machine can show anything like so good a record.



The Wonderful Differential Gear

draft rod attached to the main frame connects with a slitting device on the pole, thus connecting the horses directly with the cutter bar.

For steady, even, clean and powerful cutting no mowing machine has ever been designed that can equal the Massey-Toronto Mower. It is made exceptionally strong, and for rough land its rival is not known. It is often used on new land, where it would be most unsafe to venture with any other style of machine. It can even be used for underbrushing a swamp. The Massey-Toronto Mower is the only machine which practically admits of the cutter bar being raised to an upright position with the knife in full motion. No stopping required with the "Toronto" in passing obstacles.

## LIGHTEST DRAUGHT.

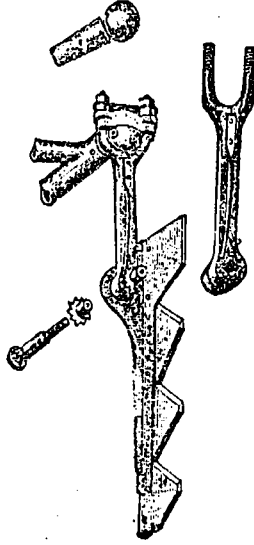


OVER A STUMP—KNIFE IN FULL MOTION.

## POWERFUL.

In every detail this celebrated mowing machine will be found to excel. The Pitman connection are ball and socket, and all slack from long wear can easily and quickly be taken up by simply turning a nut. No mow-er extant has such perfect adjustments to adopt it to all circumstances.

The "Toronto" is not drawn from the pole. A draft rod attached to the main frame connects with a slitting device on the pole, thus connecting the horses directly with the cutter bar.



Admirable Patented Pitman Connections.

road for miles without the slightest danger of injury to the machine, as when out of gear the only two cog wheels on it are thrown wide apart and the machine is like a sulky, and with the fine spring seat rides almost as easy. The Guards are of tested malleable iron, fitted with Ledger plates of steel made at our own works. The Sections are made of best English steel, specially imported by ourselves for this purpose. These, as well as the Ledger Plates, are made by ourselves. Our new Knife and Bar Department is thoroughly equipped and constitutes a large industry in itself. The Cutter Bar is of steel, and is thoroughly tested before being fitted with guards and knives. A lead wheel in the inside shoe carries the cutter bar over inequalities of the land.

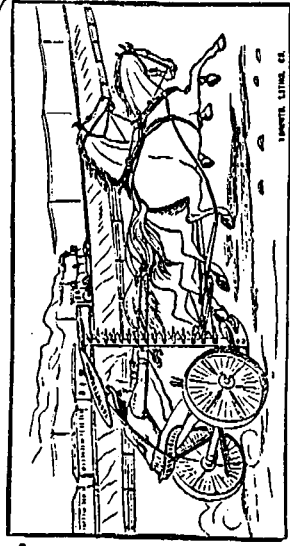
## EASIEST OPERATED.



PASSING A TREE—KNIFE IN FULL MOTION.

## DURABLE.

## ALWAYS READY.



LET HER GO! NO HARM CAN COME.

# 30,692 Massey-Toronto Mowers have already been sold and are in actual use, many of them having cut 13 seasons.

THE MASSEY MANUFACTURING CO., TORONTO, ONT., CANADA.

# • Massey's Illustrated •

(PUBLISHED MONTHLY.)

## A Journal of News and Literature for Royal Homes

[New Series.]

TORONTO, CANADA, SEPTEMBER, 1890.

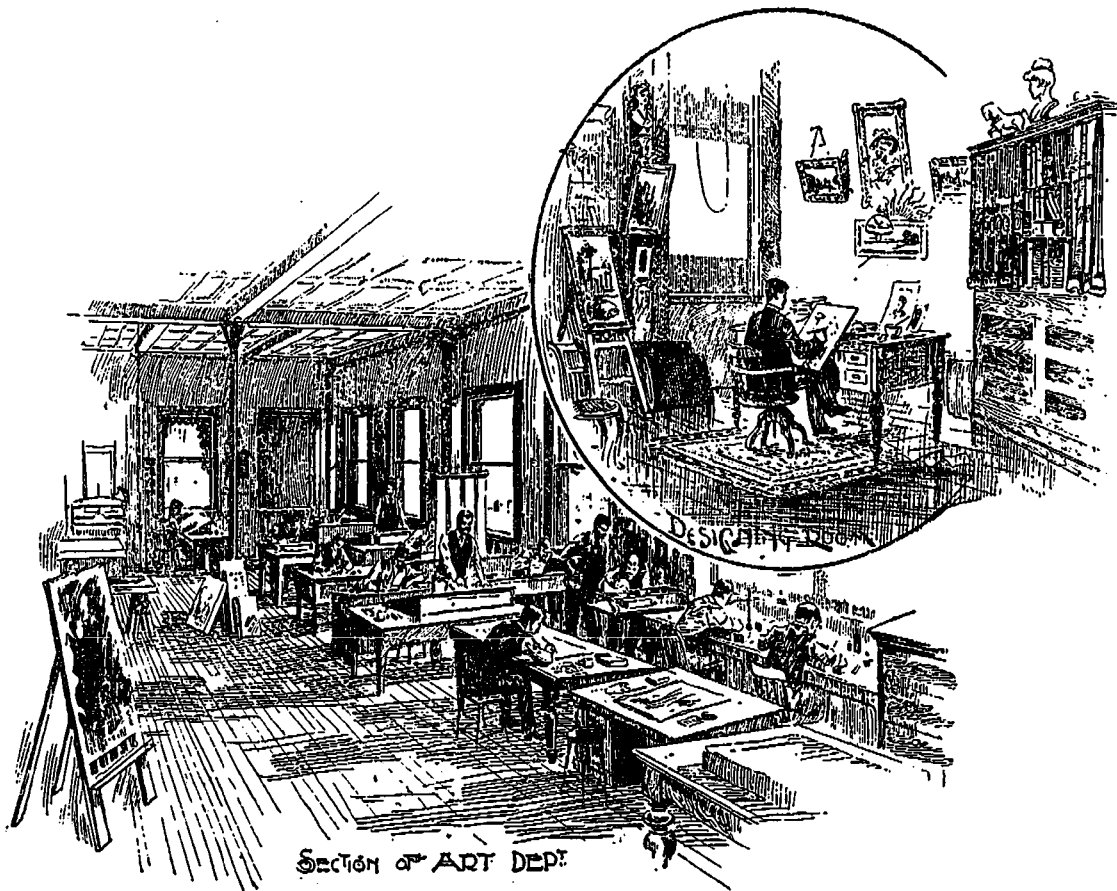
[Vol. 2., No. 9.]

### Lithography.

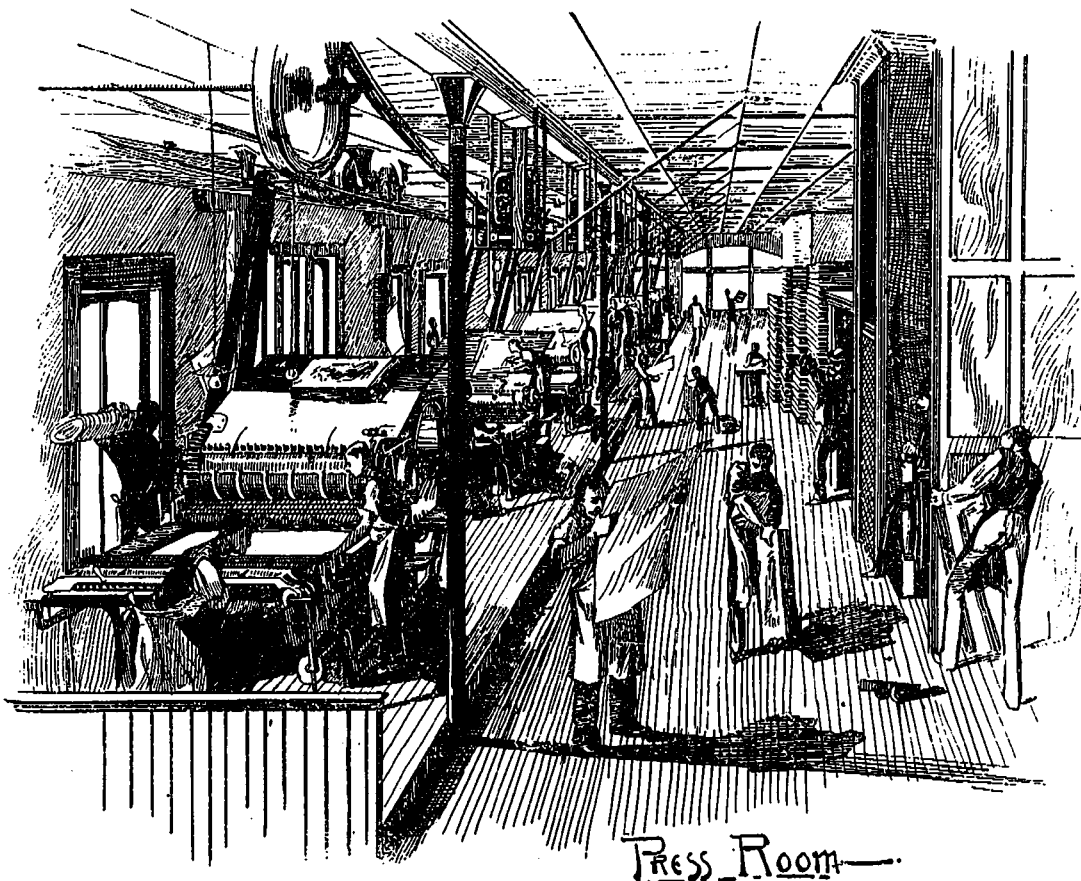
HOW THE BEST COLORED PICTURES ARE MADE.

BRIEF SKETCH OF THE ART — DESCRIPTION OF THE TORONTO LITHOGRAPHING CO'S PREMISES.

THAT "necessity is the mother of invention" is a self-evident truth, and it was never better exemplified than in the Art of Lithography, which, at the present day, is acknowledged to be one of the necessities of civilization. No branch of art has made such rapid advancement in recent years. It is much used in various branches of ornamental printing, and has been most successfully employed in the production of pictures which are almost fac-similes of paintings and colored drawings. Take the case of commercial advertising alone. Compare the crowded, poorly-printed, colored placards and "show-bills" that were in vogue but a few years ago with the works of art of the present day. Bold announcements, charming fancies of design, combined and wrought out in harmonious colors—each a real work of art—now arrest



SECTION OF ART DEPT.



Press Room.

and gratify the eye, along every road, in offices, and in every public place.

Lithography may be briefly described as a method of producing printed copies of a writing or drawing on stone without the usual process of engraving. It was invented about 1796-8 in Munich, Bavaria, by Aloys Senefelder. As originally proposed by him, it was merely an etching in relief upon stone, a process which had long before been practised both upon stone and metal, although he was probably ignorant of the fact. As early as 1728, Dufay, a member of the French Academy, described and practised a method of etching upon stone. He made a drawing with varnish, and used an acid to eat down the unprotected parts of the stone, leaving the lines in relief, and is said to have produced some exquisite work. About 1788 William Blake, the English painter, invented (or as he believed, was spiritually taught) a similar process, only he used plates of copper, and in this manner produced his most famous works. Senefelder's use of stone was wholly accidental. Being like Blake, too poor to pay for printing his works, he endeavored to devise some means of doing this himself from plates etched in relief, and to avoid expense he used smooth slabs of stone instead of plates of copper. Being ignorant of the composi-

tion of the varnish used by engravers for their etching ground, he invented a kind of crayon composed of wax and tallow. One day his mother wished him to write out a list of clothes to be sent to the laundress. Paper and ink not being at hand, he wrote the list upon a stone with his crayon. When he was about to clean off the stone, it occurred to him, as it had to Dufay, that the body of the stone could be eaten down by aquafortis, leaving the lines in relief, so that the impressions could be taken in the usual manner. His experiments in this direction were partially successful, although less so than those of Blake. In 1798 he thought of the availability of the chemical principle, which is the foundation of the art of



PREPARING THE STONES.

lithography properly so called, namely, the mutual repulsion between oily substances and water. The art was introduced in America in 1821, and was practised by Messrs. Barnet and Doolittle in New York. For many years, owing to the want of artists, it made little progress on this continent, except for commercial purposes and cheap prints, but it can be justly said that the art has now attained a high state of perfection.

The material upon which the drawing is usually made is an argillaceous limestone. Stones more or less adapted for the purpose occur in various parts of Europe and America; but the best are found in the quarries



TRANSFER ROOM.

of Solenhofen, in Bavaria, Germany, and these are almost exclusively used, being exported to all parts of the world where lithography is practised. The stone is very closely grained, and is evidently formed from the finest sediments, the color varying from a light buff to a pearl gray. The stones being quarried in mass, are split into slabs from two to four inches in thickness, and of any required size.

To enable the reader to intelligently understand the art of lithography, we will take him with us in imagination to the premises of the Toronto Lithographing Company, corner of Jordan and Melinda Streets, and describe what is to be seen there. This company lithographed the attractive cover which adorns this month's issue of the ILLUSTRATED, and we will take it as an illustration. We enter the business offices of the company from Jordan street, which are roomy, well-lighted and handsomely fitted up. We explain to Mr. Stone, the general manager, the object of our mission, and he at once takes us to the elevator, and we are speedily landed on the third floor. Here in a large, airy room about thirty artists are busily engaged drawing, sketching, coloring, etc. Leading off this room is a smaller one called the designers' room, into which we are ushered. An idea is given to one of several designers of what is wanted. He prepares a rough sketch, which is approved. Meantime we descend to the second floor, where we find the stone polishers preparing the stones for use. To prepare the stones for use they are ground to a perfectly uniform face and polished. Then they are grained by rubbing two together, with the intervention of fine sand, the graining being finer



AMONG THE STONES.

or coarser according to the work required

After the stone is thus prepared it is taken to the artists' room where we will follow it. The artist first makes a faint tracing of his sketch upon the stone, to guide him in his subsequent operations. Then he draws his picture—from one to thirty days' work—with lithographic crayon, putting in his outlines of the position of the different colors. The crayons are

composed mainly of tallow, wax, hard soap and shellac, colored with lamp black; other ingredients being sometimes added.

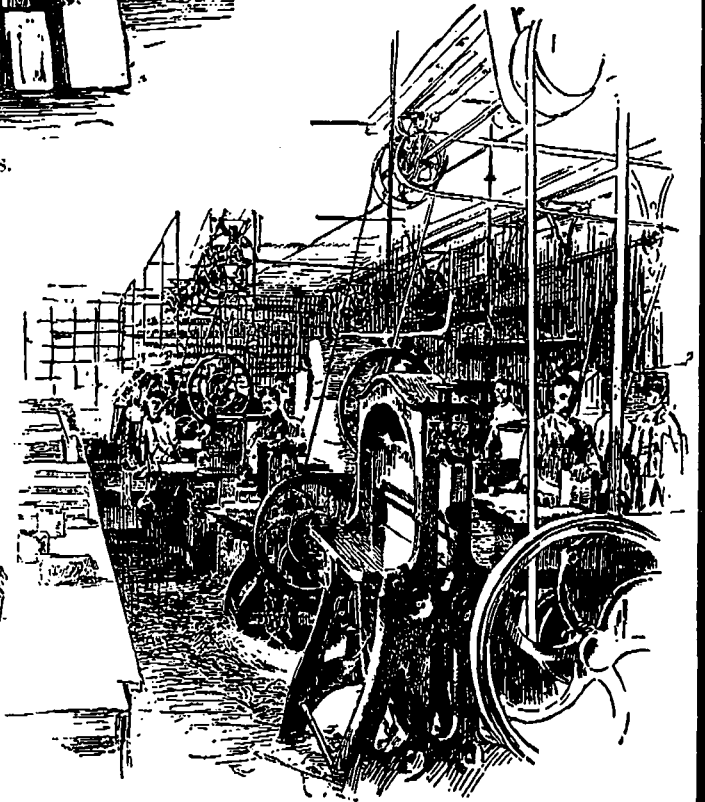
Crayons, technically called "chalk," are required of different degrees of hardness; an increase of tallow makes them softer, of shellac harder.

The principle of lithography is simple. Owing to

the presence of the alkali of the soap, the chalk is soluble in water, and the drawing can be washed off. Diluted nitric acid and gum arabic are therefore poured over the stone; the acid unites with and neutralizes the alkali and attacks the uncovered portions of the stone, rendering them more porous and more absorbent and also eats it down, leaving the lines in slight relief, thus facilitating the process of printing. The stone is then moistened with pure water; a soft roller covered with printing ink is passed over it, the ink adhering to the drawn lines and rejecting the wet surface. Then you have only to press a sheet of paper upon the stone to take off an impression of the picture. This stone is called the keystone or black stone.

It is now taken to the proving room. Here impressions from the stone are taken upon paper for as many other stones as there are colors required for the job. The prover then sprinkles powdered red chalk on these impressions, and lays each one on a clean prepared stone. This gives the outlines of the picture in red chalk, as a guide or gauge for the artist in making the color stones. He now selects a stone for the yellow that is to appear in the picture, and following the faint and shadowy lines on the stone, he redraws—again with the

lithographic crayon and lithographic ink—all those parts which are to be yellow, for instance, when the picture is printed. Then on the "red stone" he draws the portions that are to be red, and so on for each color that he needs. Each stone is sent to the prover after it has been drawn by the artist, and he proves it, being guided by the artist as to the shades and tints necessary. As the artist progresses with the stones, the prover follows, combining each color until the picture is completed, always keeping one perfect impression of each color, and of each combination, as a guide for the steam pressman in



CUTTING AND SHIPPING ROOM.

printing the edition. The proof being approved of and passed as perfect, the stones are then sent to the press room to have the required number of show cards, labels or whatever it may be, printed. After



the stone has been properly and carefully set in the press, the printer mixes his pigments to get the proper shade of color to match the impressions from the prover. The paper is then given to the first press, which is usually for the yellow printing. These are followed up with the other colors until all the shades have been printed, and the picture is complete.

Upon the skill with which these colors are arranged, and upon the accuracy with which each falls exactly into its proper place, depend the value of the whole work. The misplacement of a single color to the extent of the fiftieth part of an inch might mar the whole. This involves the necessity of the utmost accuracy in the drawing upon each stone, and also in the placing of the paper in its exact position at each impression.

To make our description as clear as possible, we show on this and the two following pages, greatly reduced copies of the six stones used to print the back cover of this issue of the ILLUSTRATED.

In ordinary work three to seven colors are used,



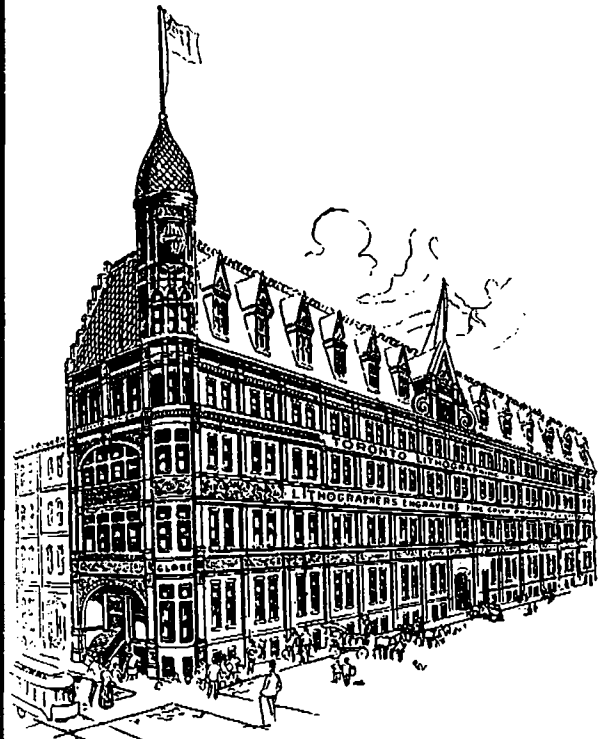
# MASSEY M'FG. CO

THE YELLOW STONE.

work, fine color work being their specialty. They also do a large business in wood engraving. All the machinery is driven by electricity, and light is produced by the same power. All the departments communicate by telephone with the business office. In their stock room on the first floor they have an immense stock of fine chromo and other

descriptions of paper, much larger than most wholesale houses in the city carry, and in the advertising card and novelty department there is also an immense assortment of all kinds and of different designs, fans, calendars, banners, etc. On this floor they have also printing presses for printing customers' advertisements on advertising cards, novelties, etc.

They employ nearly one hundred hands alto-

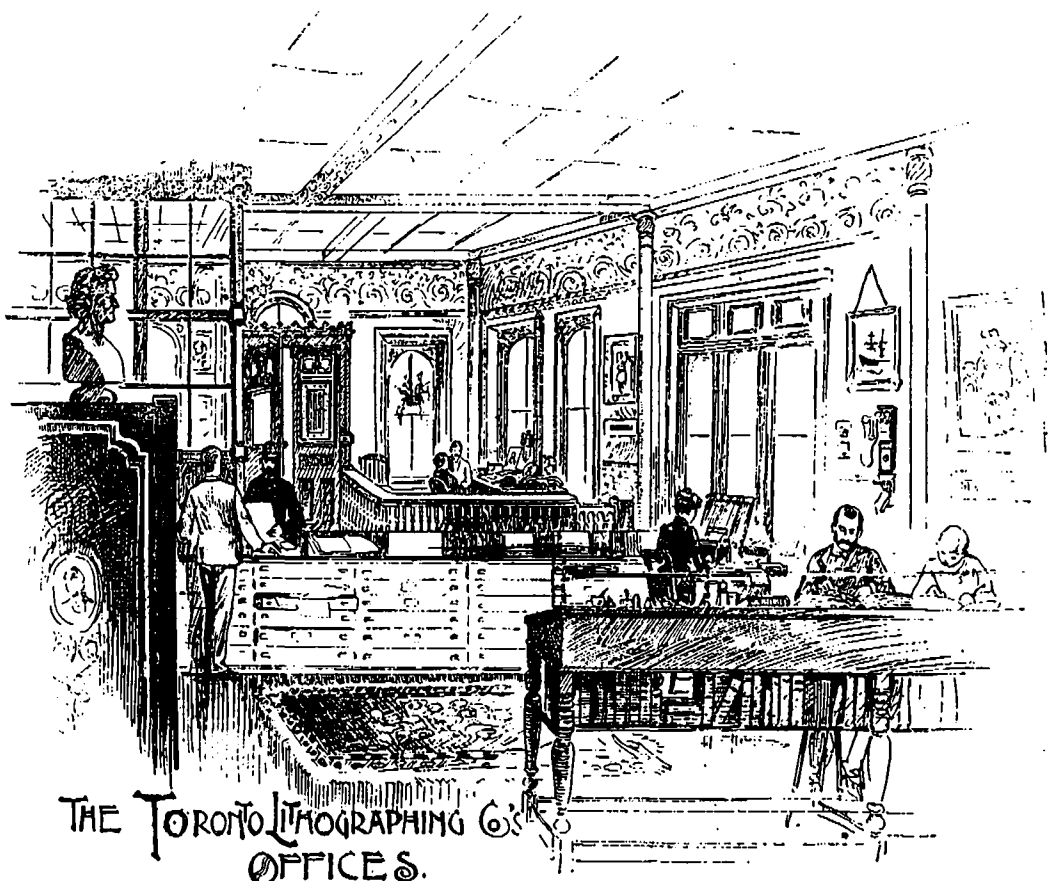


TORONTO LITHOGRAPHING CO'S PREMISES.

but very frequently ten or fifteen stones are employed, and in some very elaborate prints as many as thirty or forty, some colors being printed over others to produce variations of shading.

After the editions are run off they are sent to the cutting and shipping room, where the work is cut up, packed and sent to its destination. The cutting machines can be fixed to cut all sorts of shapes.

As we have already stated, the establishment of the Toronto Lithographing Co., consisting of three flats, each 200 feet long, is situated at the corner of Jordan and Melinda Streets, with main entrance from Jordan Street, and extends through to Yonge Street. They have also a branch office at 207 St. James Street, Montreal. The company is composed of Messrs. William Stone, General Manager; W. C. Jephcott, who superintends the works, and F. W. Heath, who looks after the interests of the company on the "road." They are all young men full of push and business enterprise. They bought out the old company of the same name in 1883, and all the plant then taken over has been entirely disposed of, and the latest and most improved machinery put in its place,—in fact it is the only company in the Dominion that has an entirely new and modern plant, enabling it to do all classes of



THE TORONTO LITHOGRAPHING CO'S OFFICES.

gether, and do an immense business, due to the admirable quality of their work, which is every year rapidly extending.

It may interest our readers to glance back at the earlier stages of lithography after its discovery by Senefelder. It was introduced into Vienna in 1802, into Rome and London in 1807, and into Paris in 1814. Everywhere it met with great favor, especially in Paris. Artists of distinction practised and aided to perfect it, and it was fashionable for the nobility to design on stone. Lemerrier cultivated the art with the most distinguished and long-continued success. He invented the auto-lithographic or transfer paper, and at the Paris Exhibition of 1855 the medal of honor was awarded to Lemerrier, who was then conducting a large establishment, containing more than 100 presses, and employing about 200 workmen. Count de Lasteyrie invented the method of facsimile printing, applicable to obtaining copies of characters that cannot easily be brought into ordinary typography, and also to maps in which all the details are lithographic, while the names of places are first produced upon the paper by ordinary printing. Englemann, by his knowledge of chemistry, was able to give a great impulse to the art of lithographic printing

in colors, or chromo-lithography. Full treatises upon lithography were published in 1819 by Count Raucourt and Senefelder. In England its productions have been of a high order, especially in landscapes, and the establishment of the Ackermanns in London was long famous for the fine specimens it furnished in this department, including the productions of Hughes, Ward, Westall, Harding, Lane, and others. As already stated, the art was introduced into America in 1821, and in the *American Journal of Science* for 1822 there is a favorable notice of it, with some of the earliest specimens.

**Veneering Frame Houses.**

A CONSTRUCTION detail that is gaining much popularity in some of the western cities is the bricking in of frame houses. The building is sided up with matched stuff, as if complete; then a brick face wall, four inches thick, is laid in contact with the exterior, tied on by spikes

about every sixth course. A boy distributes them all around on top of the wall. They are held in the mortar bed ready, and driven through into the siding till the heads are flush with the face of the wall, when the next courses are laid, and so on. The walls present the appearance of solid masonry, are durable, and, as they add to the warmth of the buildings, seem to present substantial recommendations, especially in severe climates.



THE BUFF STONE.

**MASSEY BINDER  
-TORONTO-**



**MASSEY M'FG. CO.**

THE GREY STONE.

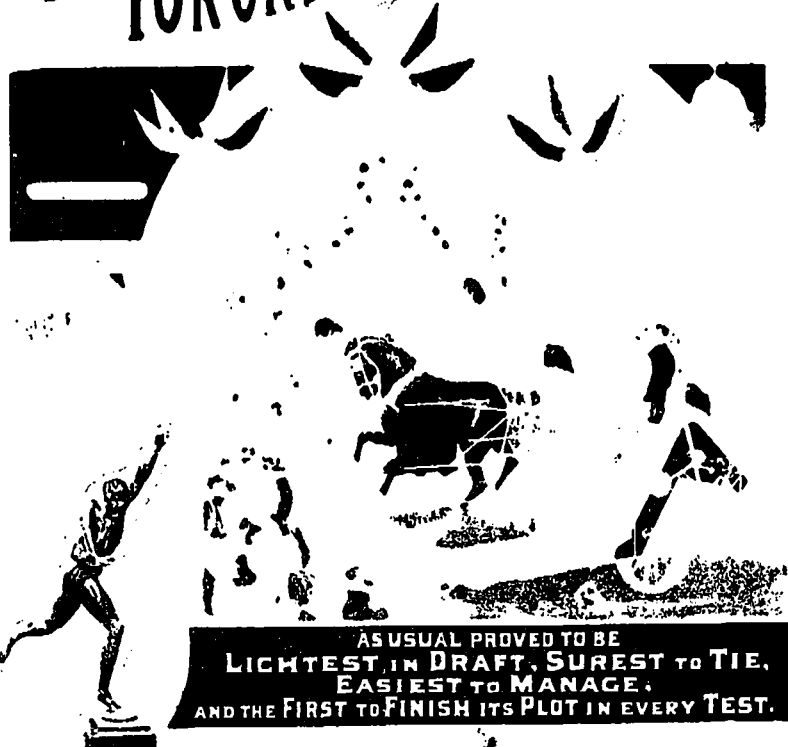
**THE MASSEY BINDER  
-TORONTO- HIGHEST HONORS**



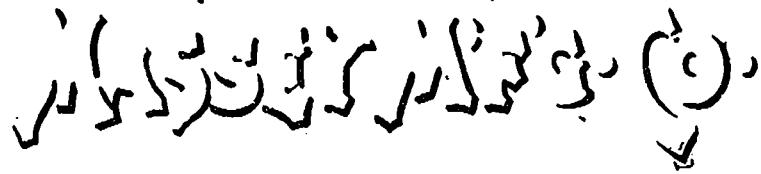
**MASSEY M'FG. CO.**

THE BLUE STONE.

# MASSEY-BINDER -TORONTO



AS USUAL PROVED TO BE  
LIGHTEST IN DRAFT, SUREST TO TIE,  
EASIEST TO MANAGE,  
AND THE FIRST TO FINISH ITS PLOT IN EVERY TEST.

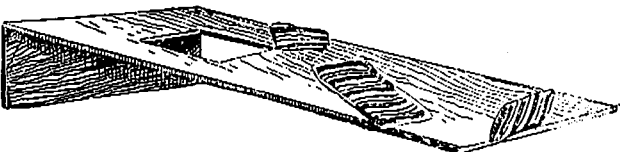


THE RED STONE.



The Game of Bean-Bags.

THE board for playing bean-bags shown in the engraving can be made of oak or of pine, stained to imitate cherry or walnut. It should be eighteen inches wide and thirty long. The opening is five and a half inches square. The piece which elevates one end and keeps the board in position when in use is eighteen inches long and nine wide. It is attached to the board with small hinges, and kept in position with hooks and eyes when ready for playing. The bags, which should be six in number, are made of scarlet and blue awning material, five and a half inches square; or rather five are that size and the sixth, called "Jumbo," is twice the



BOARD FOR BEAN-BAG GAME.

length of the others. The small bags should not be more than half filled with the beans, each holding half a pint. The amount to be played can be set by the players. They stand eight or ten feet away and try to throw through the hole. Each successful throw counts ten; if the bag lodges on the board, 5; if it falls outside, it takes ten from the count. If Jumbo goes through it counts 20. Each player takes all five bags and Jumbo at once, and throws them, one at a time. The game is scored by an umpire. When it is played as an outdoor game, throw the bags through a suspended hoop, wound with bright colors.

### A Lively Spelling Game.

Boys and girls can extract a great deal of pleasure from "The Game of Words" which they can make for themselves, and which will be of help to those who are learning to spell.

It consists of a number of little squares of thin cardboard with large letters on one side. There must be greater numbers of the letters most used. For instance, about fifty e's, forty a's, thirty-two i's, thirty-five o's, thirty-six each of s and t, thirty each of r and n, fourteen each of c, f, g, k, m and u, eight each of b, p, v and w, sixteen d's, twenty-four h's, four each of q, x and z, nineteen l's and six y's. Make these squares, which can be either one or one-half inch in size, of pieces of paste-board boxes, not too thick, or of business cards which have one white side, as the backs must be all of one color. The letters can be inked or cut from a newspaper and pasted on.

The rules of the game are very simple. Any number of persons may play, and new players can be taken in at any stage in the game. The cards are all turned backs up in a circle on a table around which the players sit. Each draws a letter, and the one that gets the letter nearest to the first of the alphabet has the first draw. All the letters drawn to determine this are put in the center of the circle, face upwards, and called "the pool." The more players the more fun. No. 1 then draws a letter from the heaps lying backs up and tries to form a word; if he can do this he has another draw, and so on until he fails to make a word of complete sense. Words of two letters and proper names are not allowed. The person on the right then proceeds in like manner, except that he has this further advantage; besides drawing from the pool he can also draw from his neighbor on the left. For instance, if that person has "ranch," and his neighbor draws "b" he can take "ranch" away and make "branch." When no word can be made all letters drawn are left in "the pool." Only one minute is allowed to think about forming new words, and you can make the game six, eight, ten or fifteen words as its limit, or you can extend it indefinitely, the winner being the one who has the greatest number of words at closing. It sounds very easy, but it is really puzzling to think quickly how to change or form words.

## THE MASSEY-BINDER -TORONTO

OBTAINS THE  
HIGHEST HONORS

AT THE GREAT  
INTERNATIONAL  
FIELD TRIAL  
NOISEL  
JULY 19 to 22, 1889

WORLD'S  
EXPOSITION  
PARIS-FRANCE

BEING A  
GRAND  
OBJECT  
OF  
ART

ALSO  
GOLD MEDAL  
WAS AWARDED

THE  
MASSEY  
EXHIBIT.

# MASSEY M'FG. CO.

OF TORONTO, CANADA.

THE BLACK STONE.



Autumn.

The golden sheaves stand ripe for gathering,  
The great round sun looks down with steady eye,  
While flocks of birds flit o'er the cool, clear sky,  
Past clouds whose tints might shame the peacocks wing;  
Above the winds, peaceful and fair they lie;  
No worrying blast unsettles their calm forms,  
Or brings to them a thought of coming storms.  
The leaves put on their fairest robes to die—  
Rude winds now pluck them from the sturdy arms  
That nursed but cannot save them, offspring frail!  
To pilgrim garbs are turned your awful charms,  
And ye with wandering winds must tread the vale.  
When the loud storm the naked woods alarms,  
Ah! who will listen to your pensive tale.



## SPECIAL OFFER.

WE will supply the ILLUSTRATED, from now to the end of 1891, for the regular subscription price of fifty cents. It is admitted that the ILLUSTRATED is the cheapest monthly magazine published on this continent, and we have ample evidence of the fact that its merits are fully appreciated by its thousands of readers, not only in this country, but in other countries, as witness the following received last month from Mr. Geo. D. Woolgar, East Grinstead, England: "I congratulate the management on producing such a paper containing as it does many practical hints and suggestions, a number of which I have followed with pleasure and profit, especially the poultry notes. My wife also sends her compliments and thanks to 'Aunt Tutu' for her very interesting articles under the 'Household' heading. Wishing you every success." That is only one out of hundreds to the same effect. Now then, friends, we want a large addition to our subscription list during the fall fairs. This liberal offer should materially help our canvassers to swell their lists and earn some valuable premiums.

ON the first of this month, a law will go into effect in New York State, which makes it criminal for any boy under sixteen years of age to smoke or chew tobacco on the streets. What a blessing it would be if such a law would also apply to this country.

THERE has been a good deal of excitement caused by reports that the slight frosts last month had done considerable damage to the crops in Manitoba. Prof. Saunders, who was in that Province at the time of the frosts, is authority for the statement that all the Ladoga wheat was harvested several days before the first frost appeared; that the Red Fife had to a large extent been harvested and what was left was too far advanced to be much injured by frost. The farmers are consequently jubilant. The Manitoba Government's bulletin estimates the wheat yield at 26 bushels per acre and expresses the opinion that there will be twenty million bushels of the product, although half a million bushels were destroyed by hail. The oats will average 44 bushels per acre and barley 34 bushels.

EMIGRATION to Canada is attracting unusual attention amongst the agriculturists in Great Britain and this month a number of farmer delegates will visit our country with the object of satisfying themselves as to its advantages for settlement and reporting the result. They will pay particular attention to Manitoba and the North West. Speaking on the subject, the Liverpool (Eng.) *Courier* says: "The reports of these gentlemen will be awaited with much interest by many English people who have friends settled in the Territories and by capitalists and others concerned in the welfare of this nearest of British colonies."

NOTHING but favorable weather is needed to make Toronto's great fair the most attractive and successful of any of its predecessors. It has been found impossible to provide space for all the exhibits offered, notwithstanding the additions to, and enlargements of, the existing buildings which shows the necessity of increased accommodation. The exhibit of live stock will be unprecedented both in number and excellence and all the industrial, mechanical, agricultural, horticultural and other departments will be more than usually interesting and instructive. Every effort has also been made by the indefatigable secretary, with marked success, to provide the best special attractions procurable. The Earl of Aberdeen will formally open the exhibition on the 9th. The Hamilton, London, and other fairs also give promise of being most successful in regard to the exhibits and other attractions. The International Exhibition, at St. John, New Brunswick, at the close of the month, will have a large display of the products of the West India Islands, besides other attractive features, and the management is sparing no effort to make it a great success.

SEVERAL cases of glanders are reported from Manitoba and the North West. This is one of the most dangerous diseases of the horse. It is incurable and therefore a horse which it affects is almost worthless. As it is infectious, a buyer should be very careful not to introduce a horse so affected into his stable. Unless the horse has been "doctored" it is easily discovered. When the disease begins there is a continuous discharge from the nose, watery and gluey, which soon begins to be mingled with pus, some of which is absorbed, and the other glands then become affected. Then the horse does not take his meat, loses strength, coughs, and the discharge grows more purulent, and more offensive, and in a short time the horse dies. The greatest care must be exercised in attending a horse so affected, as glanders can be communicated to mankind, and the death resulting from it is said to be most horrible. It is, however, not communicated by the breath of the animal, but by the discharge from the nose. As it can be easily discovered certain tricks are resorted to by dishonest dealers to make the horse appear sound for the time. To detect a glandered horse offered for sale, that has been "doctored" for the occasion, the buyer must carefully notice his general appearance, if he attempts to sneeze, and whether his breath is stinking. If the disease be very far advanced, the nose will have a well-known raw, flesh-like appearance, and if the buyer looks carefully into the nostril he may often observe a sponge or rag put there to stop the discharge for a time. The experienced man, as a rule, has no great difficulty, if the disease is far advanced, in telling a glandered horse, but often through his own carelessness and thoughtlessness he allows himself to be deceived. The penalty he has to pay is often a severe one, sometimes involving the loss of all his stud.

THOUGH the human body appears to be more delicate than that of most animals, it is yet much stronger in proportion to its size than that of the most vigorous animals. A man's strength is best estimated by the weight he is able to carry. A mathematician has figured out that if it was possible to unite in a single point, or in a single effort, all the strength that a man exerts in a day, it would be found that the weight he could lift every

day, a foot from the ground, without injuring himself, would be equal to one million, seven hundred and twenty eight thousand pounds. Men accustomed to hard labor can generally carry a burden of one hundred and fifty or two hundred pounds weight, without much exertion, and sometimes we find men of extraordinary strength who can carry considerably more weight than that. A French experimentalist ascertained the strength of the human body, by having a sort of harness made, by means of which he placed on every part of a man's body, standing upright, a certain number of weights, in such a manner, that each part of the body supported as much as it could bear relatively to the rest, each having its proper proportion of the load. By means of this machine, a man supported a weight of two thousand pounds, without being at all overloaded. The size of a man's body in proportion to that of a horse is as one is to six or seven; if then the strength of the horse was proportionate to that of a man, he ought to be able to carry a load of twelve or fourteen thousand pounds weight. But no horse can carry so much and allowing for the difference in size, his strength is only equal, if not less than that of a man. We may also judge of a man's strength by the continuance of his exercise, and the agility of his motions. Men accustomed to hunting have outrun horses, and continued the chase longer, and even in a moderate exercise, a man accustomed to walking will travel each day farther than a horse can. Couriers in Russia have traversed nearly thirty leagues, equal to about 100 English miles, in ten or twelve hours. Travellers say that the Hottentots overtake lions in the chase, and that the American Indians pursue the elk with such rapidity that they tire it and then seize it, though this animal is as swift as the stag. Many other remarkable things are related of the fleetness and endurance of the Indians, of their long journeys on foot over the most rugged mountains and through countries where there was no tract or road. As an instance of man's wonderful powers of endurance we have only to consider that terrible march of Henry M. Stanley, the intrepid explorer, and his followers, through darkest Africa, for the relief of Emin Pasha. Man in a state of civilization does not know how much strength and endurance he possesses; how much he loses by effeminacy, nor how much he can acquire by frequent exercise.

THE August report of the Ontario Bureau of Industries states that the area of fall wheat is 102,000 acres less than last year and the area of barley 174,000 acres less. There is also a decrease of 41,000 acres in the oat crop. On the other hand the area of spring wheat is greater than last year's by 203,000 acres, of peas by 73,000 acres, of beans by 17,000 acres, of rye by 13,000 acres and of hay and clover by 76,000 acres. The estimated yield of wheat exceeds last year's crop by 5,700,000 bushels, that of peas by 2,500,000 bushels, of beans by 470,000 bushels and of hay and clover by 577,000 tons. But the estimated yield of barley is less than last year's crop by 7,000,000 bushels and the yield of oats is less by 8,000,000 bushels. Compared with the annual averages of the eight years 1882-9, there is a decrease of 2,400,000 bushels in wheat, of 4,000,000 bushels in barley and of 500,000 bushels in oats, but an increase of 3,000,000 bushels in peas, 400,000 bushels in beans, and 1,264,000 tons in hay and clover. The latter is now the most important crop we grow. The wheat area is less than the average of eight years by 176,000 acres and the barley by 71,000 acres, while the oats area is greater than the average by 269,000 acres, the peas area by 137,000 acres, the beans area by 17,000 acres and the hay and clover area by 225,000 acres. The reports of the condition and quality of the crops confirm our own reports published in the July number of the ILLUSTRATED. Respecting the imported two-rowed barley, reports are about equally divided for and against. It is from a week to ten days later in maturing than the ordinary six-rowed barley, and so far the evidence does not warrant the belief that it is in any marked degree superior to the ordinary varieties in spite of the fact that it has been favored by a season of unusual rainfall and slow growth. The oat crop will be a light one, and the straw short, but this is in a measure offset by the larger area under crop. It was also attacked early in the summer by a red, rusty blight which



wrought some considerable injury. Rye was a fair crop and was well secured while peas are a very fair but uneven crop. The hay crop has been a magnificent one. Reports on the condition of the root crops are very variable, according to the nature of the soil and the situation. The fruit crop is a general failure but grapes promise a splendid yield in the Lake Erie region.

It is a common saying that "you can't have too much of a good thing." Believing this we need offer no apology for once more referring to a scheme which, if adopted, would undoubtedly be a good thing viz: the teaching of agriculture in our rural schools. What we advocate is that the government appropriate a sum for the purpose of providing instruction to a certain number of select school teachers on the subject of agriculture, thus equipping them for teaching not only the methods of agriculture but the principles on which success depends. Such instruction could be obtained at our Agricultural College. The scheme is practicable and inexpensive and should receive a fair trial. It has been tried with marked success in other countries. The Public School Inspectors of Ontario are, we are glad to see, determined to keep the matter prominently before the public. At their meeting in February last, they passed a resolution expressing the opinion that it is desirable that provision be made for the establishment of a system of advanced Public Schools more especially devoted to the interests of agricultural education; that the Minister of Education be requested to have the Public Schools' Act amended in this direction and that a special grant from the Legislature and the County and the Township municipalities be made to aid the Trustees in establishing these schools. That is practically what we suggested about a year previous to that meeting and what we have been urging ever since. As no special grant for the purpose was made at the last session of the Local Legislature, it is to be inferred that the Minister of Education had not been approached in time or that he has not been approached at all on the subject, because we could not imagine that he would refuse his support to a scheme so obviously beneficial in its results to the agricultural population. The question was again brought before the Public School Inspectors of the Province at their meeting last month in a paper read by Mr Bryant, M.A., and we cannot do better than give expression to his views. Agriculture, he held, was an art involving the practical application of many branches of science such as geology, botany and meteorology and the teaching of it must have great disciplinary effect. It might be contended that agriculture was too complex and difficult a subject to be taught in the public school. This objection could be met in several ways: (1) it was by no means clear that the sciences should not be taught in school; (2) the principles alone of the sciences were necessary to be taught, and this was easily done; (3) elementary agriculture had been successfully taught in England, France, Germany and other countries; (4) agriculture is an applied science and therefore more easily taught than pure science, the pupil's everyday life giving him a certain knowledge of the subject. Technical skill was now acquired in agriculture on the farm and at the Agricultural College. The scientific training was still lacking, but this could to a great extent be remedied by introducing and teaching the subject in the public schools. In the rural public schools the great majority of the children in attendance would, in all probability, follow agricultural pursuits. This of itself was a strong argument in favor of having so important a subject as agriculture taught in these schools. The preparation of soils, the blights to which crops are subject, dairying, and the care of live stock were matters worthy of much study. Too much should not be attempted in this line of study, and it would be well to not make the subject compulsory. The advantages to be gained by the study of agriculture in these schools were great and the lesson was obvious—if Canadian agriculture was, as we believed it was, the foundation structure of all our industries, the main fountain of our wealth, and the support of our material well-being, then, in order to maintain its position in the world, it had to become more scientific, and if it was to be more scientific the place to begin the work was in our public schools.

## List of Fall Fairs.

NAME.	PLACE.	DATE.
The Industrial	Toronto	Sept. 8 to 20.
Midland Central	Kingston	Sept. 1 to 6.
Eastern Townships	Sherbrooke	Sept. 2 to 4.
Southern	Brantford	Sept. 9 to 11.
North-Western	Goderich	Sept. 15 to 17.
Southern Counties	St. Thomas	Sept. 16 to 18.
Hentinek	Hanover	Sept. 18 and 19.
Western	London	Sept. 18 to 27.
Great Central	Hamilton	Sept. 22 to 26.
Central Canada	Ottawa	Sept. 22 to 27.
Wellesley	Wellesley	Sept. 23 and 24.
South Grey	Durham	Sept. 23 and 24.
Georgia and North Gwillimbury.	Sutton	Sept. 23 and 24.
Clarke	Newcastle	Sept. 23 and 24.
St. Grenville	Prescott	Sept. 23 to 25.
Ontario and Durham	Whitby	Sept. 23 to 25.
South Lanark	Perth	Sept. 23 to 25.
Lindsay Central	Lindsay	Sept. 23 to 25.
Bay of Quinte District	Belleville	Sept. 23 to 26.
Central	Peterboro'	Sept. 24 to 26.
Centre Bruce	Paisley	Sept. 24 to 26.
Canada's International	St. John, N.B.	Sept. 24 to Oct. 4
Central	Guelph	Sept. 25 and 26.
South Renfrew	Renfrew	Sept. 25 and 26.
West Durham	Bowmanville	Sept. 25 and 26.
Huron Township	Ripley	Sept. 25 and 26.
Tavistock	Tavistock	Sept. 26.
Central	Cammington	Sept. 26 and 27.
Lincoln County	St. Catharines	Sept. 29 to Oct. 1
East Simcoe	Orillia	Sept. 30 & Oct. 1
North Ontario	Uxbridge	Sept. 30 & Oct. 1
Central Agricultural	Walter's Falls	Sept. 30 & Oct. 1
Palmerston	Palmerston	Sept. 30 & Oct. 1
County Haldimand	Cayuga	Sept. 30 & Oct. 1
York Colony	Yorkton, N.W.T.	Sept. 30 & Oct. 1
N. Riding of Oxford	Woodstock	Sept. 30 & Oct. 1
County Peel	Brampton	Sept. 30 & Oct. 1
Mornington	Milverton	Sept. 30 & Oct. 1
Northern	Walkerton	Sept. 30 to Oct. 3
North Lanark	Almonte	Sept. 30 to Oct. 3
Great Northern	Collingwood	Sept. 30 to Oct. 3
Arthur Union	Arthur	Oct. 1 and 2.
Cattwright	Blackstock	Oct. 1 and 2.
Huron Central	Clinton	Oct. 1 and 2.
South Oxford	Norwich	Oct. 1 and 2.
Scarboro'	Woburn	Oct. 2.
Peninsular	Chatham	Oct. 1 to 3.
West Monck	Dunnville	Oct. 2 and 3.
Clinton and South	Beamsville	Oct. 2 and 3.
South Waterloo	Ayr	Oct. 2 and 3.
North York	Newmarket	Oct. 2 and 3.
North Perth	Stratford	Oct. 2 and 3.
North Renfrew	Beachburg	Oct. 2 and 3.
Melancthon	Shelburne	Oct. 2 and 3.
Muskoka	Gravenhurst	Oct. 2 and 3.
South Grimsby	Smithville	Oct. 6 and 7.
Greenock	Pinkerton	Oct. 7.
North Brant	Paris	Oct. 7 and 8.
Howard Branch	Ridgetown	Oct. 7 to 9.
Dufferin	Orangeville	Oct. 9 and 10.
Halton	Milton	Oct. 9 and 10.
East York	Markham	Oct. 8 to 10.
Central Wellington	Elora	Oct. 9 and 10.
East Riding Peterboro	Norwich	Oct. 14 and 15.
East Luther	Grand Valley	Oct. 14 and 15.
Norfolk Union	Simcoe	Oct. 14 and 15.
West York	Woodbridge	Oct. 21 and 22.

No artificial care or restraint, no matter how good or comfortably arranged, can equal or compensate for the fresh air and wholesome exercise fowls obtain when at liberty. No matter how well fed they may be, they refuse to live exclusively on the corn and other grains given by their owner, and pass their time hour after hour scratching for worms and insects, which constitute by far their most natural food, and they thus enjoy that healthy exercise which alone gives stamina and insures fertility.

"Will you allow me to sleep in the ten-acre lot back of the barn, ma'am?" pleaded the tramp. "Certainly," responded the woman, kindly, "here are a couple of matches, in case it should turn cold before morning."



1st.—An old man and two orphan boys killed by the C.P.R. express at Brock Avenue crossing, Toronto. . . . Reported that millions of caterpillars have invaded the fields in Texas and are destroying the crops.

2nd.—Tranquility completely restored in the Argentine Republic. . . . Mrs. Rodorge Vallinieri, Tecumseth, Ont., dies after having fasted for 43 days.

4th.—Arrival of Emperor William of Germany, in England. . . . Destructive fire in Lawrasons' lard oil manufactory, London, Ont., loss \$10,000.

5th.—Annual meeting of the Canadian Press Association, at Toronto; Mr. Andrew Pattullo, Woodstock, elected President.

6th.—Kemmler, the murderer, executed by electricity at Auburn prison, N. Y. being the first victim under the new law. . . . The larger part of the wonderful forests on Mount Athos, the holy mountain of the Greek Church, destroyed by fire, besides several monasteries; twenty monks and hermits perished in the flames.

7th.—An average of 100 deaths daily from cholera reported at Jeddah, Japan. . . . Mutiny of a portion of the Army service corps attached to the garrison at Chatham, England; twenty arrested and imprisoned.

8th.—Employees on the New York Central Railway go out on strike owing to the discharge of Knights of Labour; all traffic suspended.

9th.—Mr. Justice McMahon gives judgment dissolving the injunction against the removal of Victoria University from Cobourg to Toronto, but federation restrained until the Senate legally endorses it.

10th.—Death of John Boyle O'Reilly, the Irish Nationalist, poet, and prose writer, at Boston, Mass. . . . Destructive fire at Collingwood, Ont., loss \$35,000.

11th.—Death of Cardinal Newman in his 89th year. . . . Death of Judge O'Reilly at Hamilton, Ont.

12th.—"Bonanza" MacKay, of New York, elected a director of the Canadian Pacific Railway. . . . Death of Capt. William Wilkinson, a Waterloo veteran, at Windsor, Ont. . . . Total failure of the potato crop in Ireland reported.

13th.—Another disastrous fire in Collingwood, Ont., during a firemen's demonstration; loss about \$40,000. . . . Vicar Macdonnell, of Glengarry, appointed first Bishop of the newly erected Roman Catholic See of Alexandria.

14th.—Opening of the great prohibition camp, under the auspices of the Royal Templars of Temperance, in Montreal. . . . Great loss of life and destruction of crops in India caused by the Ganges overflowing its banks.

15th.—The Dominion Alliance, at a meeting in Montreal, pass a resolution urging constituencies to nominate temperance men for the next Dominion elections.

16th.—The shipping trade of Australia paralyzed owing to a strike of the marine officers who are supported by the Dockmen's and Seamen's Unions. . . . The Northern Pacific and Manitoba railway leased to the Northern Pacific Company for one hundred years.

18th.—Prorogation of the Imperial Parliament. . . . Emperor William of Germany, visits the Czar of Russia. . . . Light fall of snow reported at Denver, Col.

19th.—Eight persons killed, and twenty seriously injured, by an express train jumping the track near Quincy, Mass. . . . A terrible cyclone strikes Wilkesbarre, Pa., destroying considerable property and causing great loss of life. . . . Baron Hirsch, the well-known Jewish philanthropist, of Vienna, gives \$20,000 to the Young Men's Hebrew Benevolent Society of Montreal.

20th.—General Middleton issues a parting address to "the people of Canada" defending his action in regard to the Bremner furs affair. . . . Mr. Clark Wallace, M. P. and Mayor Clarke, Toronto, elected Grand Master and Deputy Grand Master respectively of the Orange Grand Lodge at the annual meeting, St. John, N. B.

21st.—The Thousand Island Park hotel totally destroyed by fire, loss \$150,000. . . . Dhuleep Singh, Maharajah of Lahore, apologizes for his hostility to the Queen and is pardoned.

22nd.—The Duke of Clarence, eldest son of the Prince of Wales, reported to be seriously ill. . . . Mr. Robidoux sworn in Attorney General of Quebec and Mr. Charles Langelier, Provincial Secretary. . . . Mr. W. D. McIntosh of Toronto, elected President of the North American United Caledonian Association at the annual convention, Detroit, Mich.

23rd.—An Association for the colonization of Palestine successfully established in London, England. . . . A killing frost reported in Minnesota and in all the border counties of Northern Dakota and Manitoba, westward to Minnesota.

25th.—A passage opened from end to end of the St. Clair river tunnel, constructed by the Grand Trunk railway. . . . Arrival of the Earl and Countess of Aberdeen at Quebec.

26th.—Dr. Peters, the German explorer in Africa, whose death was reported, arrives in Berlin, and is banquetted.

27th.—Attorney-General Longley, of Nova Scotia banquetted by the Liberals of Toronto. . . . Sir John Thompson, Minister of Justice, returns to Ottawa from his official trip to England.

28th.—Prof. Goldwin Smith, Mr. Erastus Wiman, of New York, and Attorney-General Longley, of Nova Scotia, addressed a large audience at the Canadian Chautauqua, advocating unrestricted reciprocity.

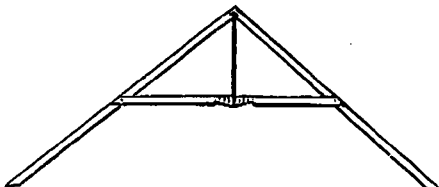
30th.—The new steamer, *Empress of India*, for the C.P.R.'s China and Japan route, successfully launched at Barrow-on-Furness, England.



### Grading the Bottoms of Ditches.

A LARGE portion of the underdraining performed by farmers is done during different parts of autumn, as spare time from other work permits. If the land is very nearly level, it is important not to make any mistakes in grading, and an accurate leveling instrument may be necessary in laying out the drains, to give them a uniform descent, and not to make the blunder of trying to make the water run up hill. But a large portion of the land requiring underdraining has more descent, and with a moderate degree of care any intelligent farmer may lay out his drains.

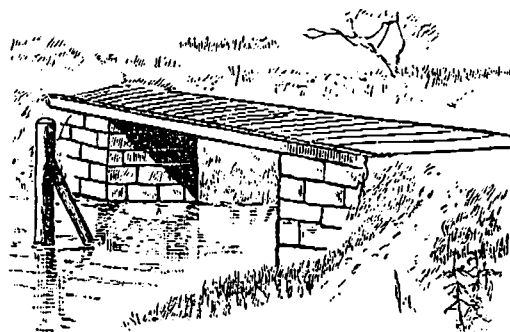
The following will be found a simple mode for grading the bottoms of ditches. The instrument used is represented in the accompanying figure, and has a space of say twelve feet and three-eighths, or three-fourths of a rod. The arms are made of light half-inch pine, screwed or nailed together. The brace or cross-bar is graduated at the middle by testing on a level floor. It would do to suspend a cord from the top, but a small square iron rod is



better, making it easily carried. If the surface of the land is quite level, the rod will hang at the central mark; if sloping, it will incline towards the downward descent. With this simple instrument, the surface of the ground may be examined, whether up or down, and the drain laid out accordingly; and then when the ditch is dug, the grading of the bottom may be accurately completed by using on it this instrument. It will do the grading whether a rod or a mile long. The graduation at the centre of the cross-bar will show whether the descent is steep or gradual. At the same time, being three-fourths of a yard span, it is easily used by one person in measuring the length of the ditch, or making any other measurement of land. The whole weight of the instrument is less than five pounds, and will not cost a dollar. For rough ground a second cross-bar may be added, connecting the two points of the arms.

### Protecting Small Bridges and Culverts.

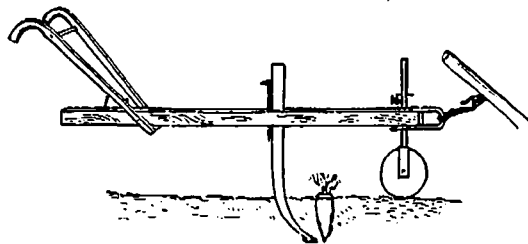
THE greatest danger to bridges and culverts occurs at flood or high water time, when driftwood chokes the waterway under the bridge, causing overflow and often great damage and destruction. The danger may be greatly obviated by following the plan herewith illustrated. It consists simply



in setting a stout post from two to four feet from the entrance to the bridge, on the up-stream side. All driftwood and flotsam, instead of floating down against the walls of the bridge, lodge against the post in midstream. Even should the space between the post and the abutments on both sides be filled with rubbish the mouth of the bridge will remain unobstructed, and the water will flow through, under, and over the obstruction with perfect freedom.—*American Agriculturist.*

### Home-Made Root-Lifter.

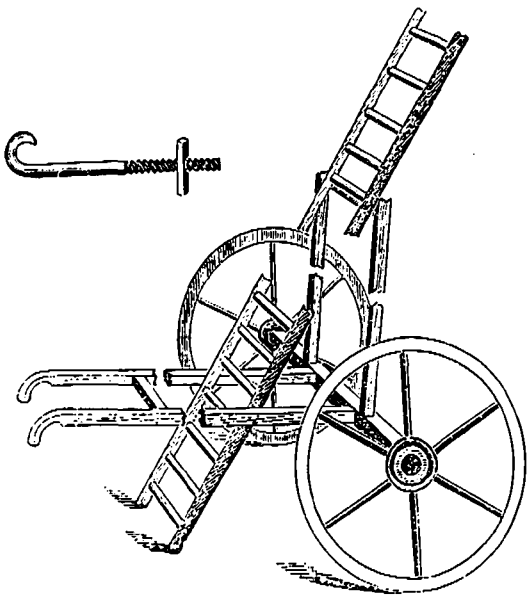
THE accompanying engraving is so clear that it scarcely needs explanation. The beam is of hard wood two and a half by three and a half inches, and five feet long, to which the handles are bolted and braced. In front is an inch hole, through which passes a round iron rod, forked at the lower end to hold the wheel, which may be of wood or iron. The upper end of the clevis is turned up, and a threaded hole cut in it, to receive the thumb-screw which holds the wheel-rod in place. The



iron lifter is inserted in a mortise about midway of the beam, and held in place by a key, as shown in the engraving. The foot is of five-eighths inch iron, three inches wide, with a small wing of steel riveted to the lower end. The roots to be lifted are first topped, as they stand, with a sharp hoe, throwing two rows of tops into one. This leaves the foot free to work without obstruction.—*American Agriculturist.*

### Wheeled Fruit-Ladder.

OUR illustration shows the form and construction of a ladder which is very portable, safe and convenient. The ladder itself is made in the ordinary manner, the side pieces being either half-round or flat, with inch holes for the rungs, which must be of some tough, hard wood. The wheels may be from a worn-out wagon, or cultivator. The axle is four feet long, shaped at each end to fit the inside of the wheel hubs. Two horizontal poles of two-by-four scantling, six or eight feet long, are mortised at one end into the side of the axle, while the other extremities are tapered off to form handles, and a cross-piece one-by-two inches is mortised into the poles and nailed there. Two upright pieces,



five feet long, are also mortised into the axle, and a cross-piece fastened into the upper ends. The ladder is firmly attached to the side-pieces by half-inch screw-bolts. Two hooks of the form shown in the upper part of the engraving project through the upper end of the uprights and hook over one of the rungs of the ladder. When in use the foot of the ladder rests upon the ground, and it is virtually a step-ladder, but far more portable and convenient.

OUR readers will no doubt visit the fall fairs freely. By a close study of the exhibits, and in conversing with the exhibitors, who are always glad to talk about their exhibits and their ways of managing, many valuable new points will suggest themselves to the observant visitor.

A POTATO that has been greened in the sun is spoiled for eating, but for seed it is all the better. Such potatoes will be from a week to ten days earlier than others of the same variety planted at the same time. With late varieties they will produce a larger crop, as the growth will be more vigorous on the same kind of land. Exposing potatoes to the sun for a time before planting may be done with the hills selected for seed by partly uncovering the potatoes while still attached to the roots, taking care that it be done in not very hot weather, and that potatoes so exposed be dug before danger from the frost.

THE cheapest warm wall for general farm purposes is one made of wood with a four-inch airspace, which is filled with dry sawdust or some other good non-conducting material such as chaff, cut hay, or cut straw. It is all important that the material should be dry when put in, and then be so protected that it cannot get wet either from water coming in at the top or the sides. In making a dead-air space the sides of the wall should be tight both inside and out, in order to prevent any circulation of air and to have it a true dead-air space. Dead air is the best of non-conductors, but its efficiency depends to a great extent upon the number of times it is broken up.

IT is a common practice for the farmer's wife and those in charge of the garden to use the best vegetable crop for house use, and when the peas, beans, radishes, sweet corn, and the like have dried and ripened, to gather the seeds for planting the following season. It is therefore not surprising to hear of certain varieties running out, as they call it. Instead of doing that mark off enough of the best part of a row or patch for seed, and don't take any from it, unless the small pods of peas and beans, the small ears in corn, and the smallest radishes. Then when cleaning the seed out, take only the best developed. By this method there is a chance of improvement instead of deterioration. When the seeds are dry, put them in packages, and mark the year on the packet. Leave the sweet corn in the husk, and hang up in an airy place.

A MISTAKE is often made in the use of hot water in cleaning dairy utensils. Hot water makes milk curd insoluble and hard and tough, so that when utensils are scalded before they are thoroughly cleaned from the remains of sour milk, the curd is solidified in the pores of the wood and becomes a permanent agent of mischief. Any alkali dissolves curd of milk, and after first well rinsing the utensils, and especially the churn, with cold water, a solution of common soda or saleratus (carbonate of potash) may be very usefully employed to complete the removal of all traces of the sour milk. Then another rinsing with cold water, followed by a scalding with boiling water, and a finishing dashing of cold water, always pure, will complete the work. The washed utensils should then be placed under an open shed in the free air or in a clean, airy, dry dairy for use again.

WHEAT succeeds best in a compact seed-bed—one in which the particles are not fused into masses, but in which they are distinct and in close contact. Hence, in the preparation of ground for wheat, the roller and harrow should be used as much to compact the seed-bed as to pulverize the clods. In such a seed-bed there is greatest capillarity; moisture and heat are most generally and equally diffused through the ground. Each grain of seed is likely to find those conditions essential to germination, and the plants those conditions favorable to growth. When the wheat is sown there is often a deficiency of moisture in the upper soil; but if the seed-bed has great capillarity, moisture will be lifted from it. In a compact seed-bed there are no holes in which water can collect, and the capillary condition prevents an excess of moisture about the roots. The wheat plant is doubtless injured by stagnant water about its roots, and this is also chiefly responsible for the serious heaving out of wheat by frost. In a compact seed-bed the roots

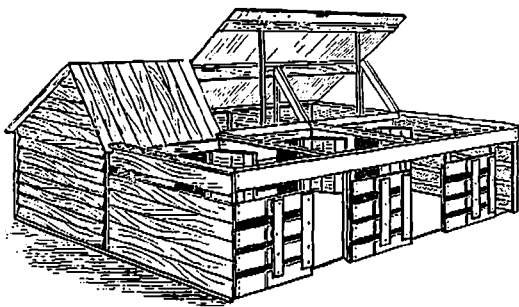
also get a surer hold than when they must cling to the sides of holes or crevices. Finally, such a seed-bed most readily yields plant food, and the plant can make a stronger growth against frost and insects, or more readily recover from their attacks.

THE trick often played by mischievous children, of reflecting the solar rays by means of a piece of looking glass to a certain spot, thus amusing themselves and annoying their neighbors, may be turned in many ways to very useful purposes. In case the bottom of the farm well needs examining, it is very easy to hold a mirror or a piece of the same in such a position as to reflect its rays in the water, so that not only anything floating on the surface can be plainly seen, but also whether the water be clear. If the contents of the well are not turbid, the smallest of objects on the bottom can be distinguished. When the objects are small, or a minute examination of the bottom is required, an opera-glass may be put in requisition. If the top of the well is not exposed to sunlight, a mirror may be placed outside, even at a great distance, to reflect a light over its top, where a second mirror may reflect it downward. Impurities and sediments at the bottom may thus be discovered, and the experiment thus serve as a sanitary precaution. Letting a lamp, candle or lantern down, gives by no means so successful a result, as the light is very weak compared with sunlight, and its glare, even when the eyes are shaded from its direct rays, prevents distinct vision.

### The Stock.

#### A Small Hog House.

THE house illustrated is 12 by 18 feet floor, with corner posts three feet high. The feeding floor is 6 by 18 feet divided into three pens, each six by six feet, with three sleeping pens of the same size. The doors are each 22 by 30 inches. The ridge pole is 5 feet 2 inches high, and 20 inches back from the division wall, thus making the back of the roof longer than the front. The front roof projects 3 inches above the back and is hinged to the top of the back roof, so that it can be lifted to admit the sun. The sleeping compartment is first sheathed with half-inch stuff. Building parchment is then matched over the outside and roof, and the whole sleeping compartment is weather-boarded outside, and cracks or joints on the roof are mismatched with the same half-inch stuff, thus protecting the



paper and making a warm, dry house. The object in having so small a house is that the pigs may be readily removed to fresh ground. The poles upon which it stands are cut up to the shape of the sled runners, and two teams will draw it anywhere. The partitions in the bedding and feeding floors are all slipped in between cleats and may be removed, allowing the building to be used for wintering a bunch of hogs. These buildings are not intended for sows to farrow in; but for sows and litters after they are a week or two old. The entire cost of the house is trifling.

It is by neglect long continued that the "scrubs" are made and it must be by long-continued care and generous feeding that they must be redeemed from their low estate. So it is with the best bred stock, which will deteriorate faster than the common stock, because they have more room to fall, unless carefully kept up to the highest point of thrift.

LOCALITY has much to do with successful hog raising. Be sure to have water enough for the hogs to drink, for they need a great deal; an occasional bath will not hurt them. There are very few farms on which hogs cannot be successfully raised, and none but what pigs needed for family use can be profitably kept. Any farm where pastures and proper shelter for the hogs can be made will do. Provide shade for the hogs, if possible, as they need shade as much as any other farm stock. It is inhuman to keep a hog in a pen four or five times as big as himself. It is cheaper to buy pork than to raise it in an uncleanly hog pen, where the poor brute has no chance to be cleanly even though he wishes to.

In sheep-breeding a mongrel sire is worse than bad. It is admitted that cross-bred ewes make good dams, but when wool is the chief consideration the first cross is far and away the valuable one. Australian wool has a world-wide renown. The best fleeces are the result of the union of a clean-bred, short-wooled sheep with a clean-bred ram of a long-wooled tribe, or *vice versa*. All further crossing causes a marked deterioration in the fleece. This is not perceptible in flocks raised for mutton, as the cross-bred ewes can, generation after generation, be bred to pure-blooded rams until the old strain is lost and the flock attains an almost clean standard of pedigree. Every cross in the upward direction improves the quality of flocks as mutton sheep.

WITH horses mastication is all done at one and the same time, and therefore it is most important that the strongest and most concentrated food be given them first so that the digestive organs may have time to act upon it. The stomach only holds a certain amount of food, with the necessary quantity of saliva (generally four times the weight of the food), to aid in its digestion. And if they are fed with hay immediately after eating their oats or corn, the latter is forced out of the stomach into the intestines before its full strength is appropriated by the system, and so passed out with much of its nutritive qualities still retained. So with watering a horse immediately after eating his oats, or corn, the latter is forced along before it has been properly digested.

It is a great mistake to breed immature animals. It no doubt costs more to carry an animal well on toward maturity before breeding it, but the gain from early breeding is not real. There is a positive substantial loss. The result is an animal having less and less constitution, vitality and vigor; hence an easy prey to disease, and very susceptible to unfavorable influences. But the harm is not confined to the offspring—the parents are stunted and weakened. The circumstances of parentage are a draft upon vigor and development to which immature animals are unequal. Only a mature fully developed female can properly nourish her offspring, and the small litters of young sows and the weakly calves of young cows cannot have good mothers. If we would breed only mature animals we would have more young, and the young would be thriffter and faster growing, capable of paying a higher price for feed, and of resisting conditions to which the offspring of young animals frequently succumb.

THE black stable-fly known as *Stomoxys calcitrans*, so much resembles the house-fly that it is commonly supposed to be the same, and but little notice is taken of it, although its severe bites cause the horses to stamp and worry themselves all through the night. This fly has a very different method of attacking its victims from that of the house-fly which causes annoyance only by the tickling sensation made by its comb-like mandibles by which it scrapes its food from the skin. The stable-fly has a powerful proboscis, by which it bites through the skin and draws blood which it sucks voraciously. Every one who has milked cows, which are equally infested as horses, may have at times felt its bite, like a sharp prick as of a needle, around the ankle protected only by the thin stocking, as he has stooped at his work; and it is this fly which alights

on the cow's legs and body and causes her to switch the tail so violently to the intense annoyance of the milker. It attacks the horses mostly on the legs and is very active during the night. Washing the legs with carbolic soap suds, leaving it to dry on the skin, will be found an effective remedy; but clean stables protected by wire-gauze windows and doors and the liberal use of Persian insect powder dusted through the stable before closing for the night, will relieve the suffering and weary beasts from their tormentors.

### The Poultry Yard.

DON'T fail to gather a few barrels of road dust now, while it is dry, for the winter's dust bath.

If you keep chickens in pens, throw in all the vegetables and garden truck you can spare. They will not waste it, but will make ample returns in eggs.

THE best cure for distemper is warm, dry quarters, an average temperature of 70° for about ten days, not too stimulating diet, and clean water with a few drops of tar oil added.

WOOD ashes, when scattered over the poultry yard, cause sore feet, due to the alkaline properties of the ashes. The best mode of disposing of them is to first leach them, allow them to dry, and place them in a box for the fowls to pick over.

POULTRY that are to be wintered over should not be fed too much in the fall. The better plan would be to gradually increase the feed as cold weather sets in. While the weather is more favorable and the poultry can run out, they will pick up considerable food. But if fed too much they will get too fat, and either extreme is to be particularly avoided.

FOWLS often get run down and require a change of food; especially laying hens, which are large consumers. Giving them the best care daily will keep them from eating feathers, and promote health and activity. Before doctoring ailing fowls be certain of the trouble, as much damage is done by administering doses for a disease that may not exist at the time.

WHEN a chick has a "bustle" over one eye, or both eyes, the trouble is caused by drafts in the roosting shed. Place the affected chicks in a coop and bathe the swelling with hot salt water two or three times daily. If badly ulcerated use a five per cent solution of carbolic acid once daily instead of the salt water, but bathe the affected parts with hot water frequently.

WITH a good many farmers now is the time to either thoroughly repair the old poultry house or build one, if needed. Be guided by the number of poultry you intend to keep, making careful calculations to give them ample room as it is not profitable to crowd. On a farm a warm comfortable house for the poultry is all that is necessary. This can be built at a small expense and will be fully as good for all practical purposes as an expensive house.

WHEN the hens lay soft-shell eggs, you may at once come to the conclusion that they are too fat. All the lime, ground oyster shells, bones or other food, will be of no avail. When the hens are fat the reproductive organs are obstructed, and the shell cannot be deposited around the yolk and albumen, nor will eggs from fat hens, even if perfect, hatch well. Whenever soft-shell eggs are laid, anything that tends to increase fat should be avoided, and the hens made to exercise themselves as much as possible.





**THE Decline of Agriculture**—A boy's refusal to remain on his father's farm.

ONE who thinks he knows all about farming says the best way to raise strawberries is with a spoon.

How to raise lambs is a question for discussion at a farmers' meeting. Our way would be—ewe's milk.

"GENTLEMEN, make room for one mower," said the farmer, as he set to work a new hand in the hay field.

KANSAS TEACHER—"Where does all our grain go to?" Scholar—"Into the hopper." "What hopper?" "Grass-hopper."

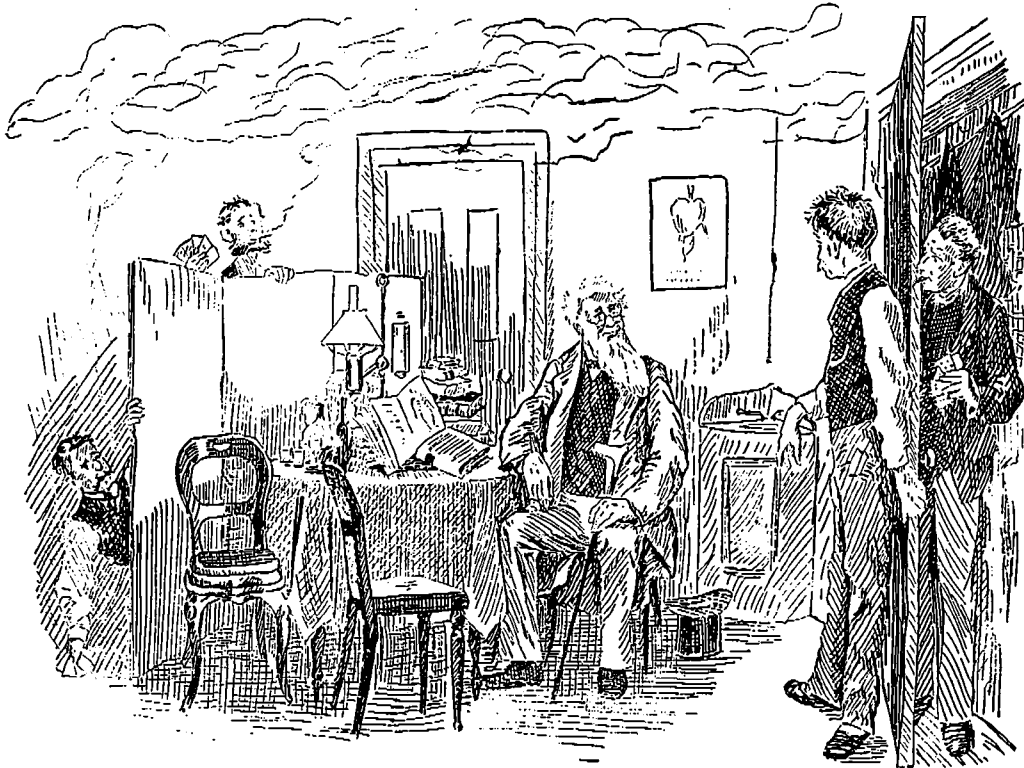
MRS. WARD—"Where is your husband working now?" Mrs. Precinct—"He ain't working; he has got an office under the Government."

A LITTLE five-year-old boy, who had seen a peacock for the first time, ran into the house exclaiming to his sister, "Oh, Lizzie! I've seen a great, great, big, monstrous tail, walking round with a hen tied to it."

"LIVES of Milkmaids off' remind us  
That it's but a little jump  
From a quiet, docile Jersey,  
To the old familiar pump."

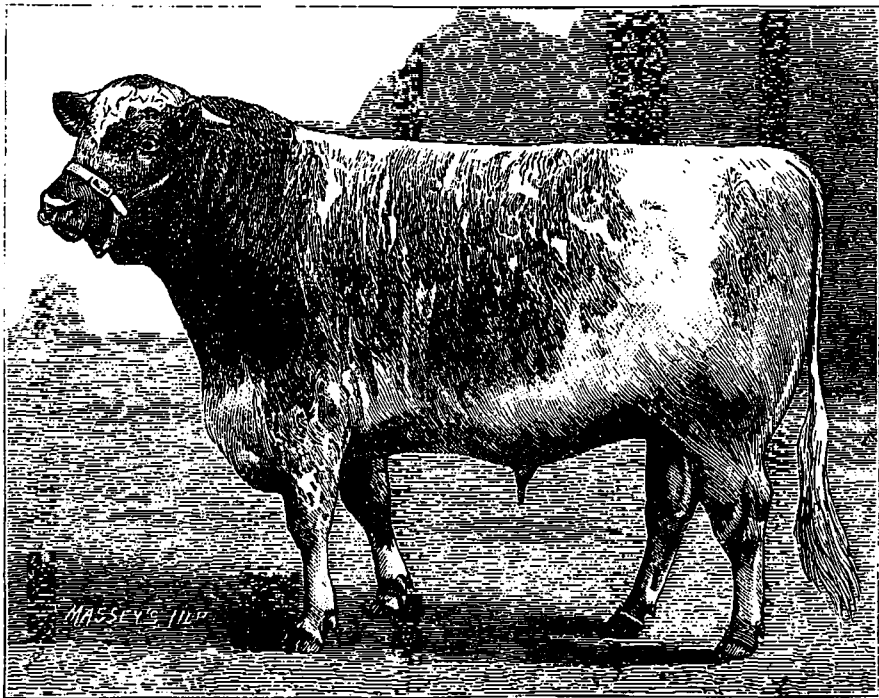
JONES' REVENGE.—Muggins—"Funniest thing happened the other day—Jones was trying to make his mule drink out of a bucket, when the animal kicked him." Cobb—"Ah, then, did Jones kick the mule?" Muggins—"No, he kicked the bucket."

WIFE—"On the 25th of next November we will celebrate our silver wedding. Don't you think we ought to kill the fat pig and have a big feast." "Kill the pig! I don't see how the unfortunate animal is to blame for what happened twenty-five years ago."



#### DROPPED IN UNEXPECTEDLY.

FOND FATHER (from the country, paying visit to son, medical student).—Well, my boy, I'm glad to see that you're working hard, and not wasting your time, as many young men do, drinking and playing cards with loose companions. And now sit down and we'll have a good two hours' chat before I go back to the hotel.



We have the pleasure of presenting a portrait of the Short Horn Bull Challenge Cup, 57,029. He is the property of Mr. J. Deane Willis, Bapton Manor, Wilts, England, and was awarded the champion prize as the best bull at the show of the Oxfordshire Agricultural Society at Oxford last May.

He was calved November 17th, 1887; got by Cup-bearer 52,692) a noted prize bull in the United States) and from Princess Consort, by Comet 41,250. Mr. Willis last autumn exhibited him at the London Show of the British Dairy Farmers' Association, when he gained the first prize.

#### The Massey Steel Binder.

FROM Toronto, Ontario, my birth-place, I came,  
The Massey Steel Binder, you know, is my name;  
Wherever the labour-worn tiller of soil  
Has wandered, I've followed to lighten his toil;  
The Ontario farmer so proud of my skill,  
Sits and sings as he rides to the clack of my steel;  
As it was, so it is, and is likely to be,  
The Massey Steel Binder is the binder for me.  
His horses, delighted with labour and song,  
Keep step to his sonnet and time it along;  
His family at leisure, now sit on the fence,  
Shouting Bravo for Massey, the thing goes immense.  
I've driven the buffalo out of the West;  
Dropt a sheaf on the graves where the red hunters rest;  
The coyote alarmed and disturbed at the sight,  
Deserted his camp in the dead of the night.  
The Mexican war-whoop, and the buffalo's roar,  
Have gone with the ages, we hear them no more;  
The red man, well pleased with the change he has seen,  
Has abandoned the gun for the Massey machine.  
The British Columbians now call me by name,  
And Vancouver's Island has heard of my fame;  
The grizzly retreats at the sound of the thing,  
And wonders what next the pale-faces will bring.  
Vainly our big Yankee brother has tried,  
By protective measures to keep us outside,  
We bade them defiance, jumped over the wall,  
And conquered the country big tariffs and all.  
I've crossed the Pacific for conquest, and now  
New Zealand with laurels hath garland'd my brow,  
And since to Australia a victor I came,  
No Laycock or Trickett has sullied my fame.  
I've crossed the Atlantic and entered the ring,  
'Gainst all opposition the world could bring,  
On the fields of Noisiel established a name,  
And the hills of Great Britain, re-echo my fame.  
Some others have followed our lead it is true,  
And still let them follow, it's all they can do,  
While sensible men understand what they need,  
The Massey Steel Binder will still take the lead.  
We travel right onward with banner unfurled,  
Our harvest is ready, our field is the world,  
And this is our watch-word wherever we go,  
"The champion of all but to no one a foe."  
No longer your sisters need wear out their sleeves,  
In helping their brothers to tie up the sheaves;  
The husbandman sits like a king on his throne,  
Reaps down his broad acres and ties it alone.  
The millennium is coming we have it right now,  
Men no longer live by the sweat of their brow;  
Since Massey made science the slave of his will,  
The world's getting rich by his genius and skill.  
From the East to the West, from the North to the South,  
From Niagara's source to the Amazon's mouth,  
Friend and foe are compelled to acknowledge my worth,  
And strangers shout, God bless the land of thy birth.

GEO. NORRISI.

## THE CANADIAN HORSE & CATTLE FOOD

Is prepared by T. H. BUTLER, for twelve years manager of the Thorley Company of Hamilton, and is guaranteed equal to the best Thorley Food ever made, or any other food.  
No antimony or any other poison used in it. Give it a fair trial and you will never buy any other. Ask for the

Canadian Horse and Cattle Food of Hamilton,  
and see that you get it.

POULTRY FOOD A SPECIALTY.

If you cannot find it at your dealer's, tell him to order it from

97 Main Street East, - Hamilton.

### Breeders' Directory.

Cards of not less than two lines space and not more than six lines space inserted for one year at \$2.00 per line, less 25 per cent. discount, if paid quarterly in advance.

**HOLSTEIN CATTLE.**—My Herd at Exhibitions of 1887, '88, and '89 won all the Chief Prizes—winning more Money Prizes, more Gold and Silver Medals, and more Diplomas than were ever won at same number of Exhibitions by any herd of any breed of cattle in the Province. Young Bulls for sale. JOHN LEYS, Toronto, Ont.

**POLAND CHINA HOGS.**—A few Choice Poland China Pigs, different ages, for sale. Apply to W. G. BALDWIN, Lakeside Farm, Colchester, Ont.

LIVE AGENTS wanted to canvass for MASSEY'S ILLUSTRATED. Valuable premiums given. Sample copies and Premium List free to canvassers who mean business. See our special offer on page 6.



**HEADQUARTERS**

IN CANADA FOR

Land Salt, Barrel Salt, Agricultural Salt, Land Plaster, White Portland Cement.

ENGLISH BRANDS.

Above in carloads only. Special rates of freight to all points. Farmers in certain localities will find it advantageous to club together and take one or more cars. Address all communications

JOSEPH STRATFORD, Brantford.

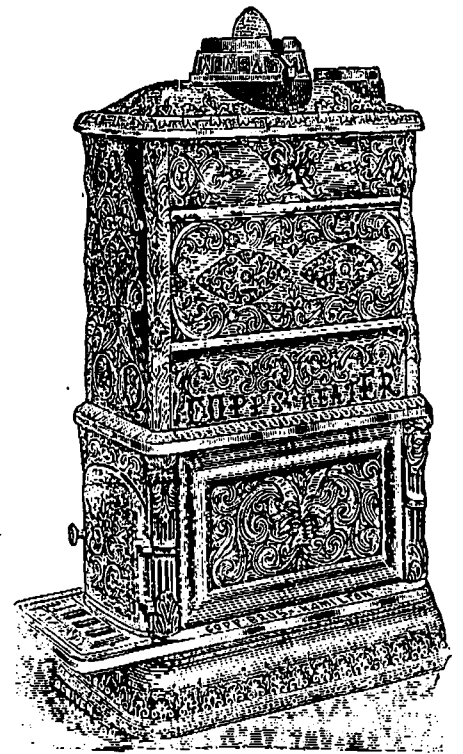
Also Canadian Agent for the great London Purple and Pure Paris Green in quantities.

**FOR SALE.**

Two half sections and one quarter section, comprising 800 acres of the finest land in the North-West Territories, 13 miles from Regina, and 9 miles from Balgonie; 170 acres under high state of cultivation. Good frame dwelling house, frame stables, granary, etc. A flowing stream and a good spring well 200 yards from the house.

Also horses and cattle, and every kind of machinery required to operate a farm. This offer is cheaper than homesteading or buying government land.

Inventory and terms on application to  
A. L. Maclean, care Massey & Co. (Limited),  
Winnipeg, Man.,  
or to Alex. H. Maclean, Regina, N.W.T.



**COPP WARRIOR HEATER.**

This beautiful stove for economy and capacity surpasses anything we have ever manufactured. Its construction is such as to produce the greatest possible volume of heat upon the least consumption of fuel. We have been most fortunate in arriving at this result, and to-day offer in the Copp Warrior Heater the cheapest, most powerful and economical heater, combined with durability, in the world. Its success has been marvellous, surpassing our most sanguine expectations. We shall be pleased to give further information upon application.

COPP BROS., - Hamilton.

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SOLICITORS OF HOME AND FOREIGN PATENTS.

ESTABLISHED 1867.

22 King St. E., Toronto, Ont



Use  
**Myers' Spice**  
for your



**Horses and Cattle**

Which has had a run of 27 years of the Greatest Success in the Old Country

BUFFALO BILL (Col. W. F. Cody).—I have used your Condiment in my stables and found it as represented. I take pleasure in endorsing its usage by horsemen, as I now believe in it as A No. 1.

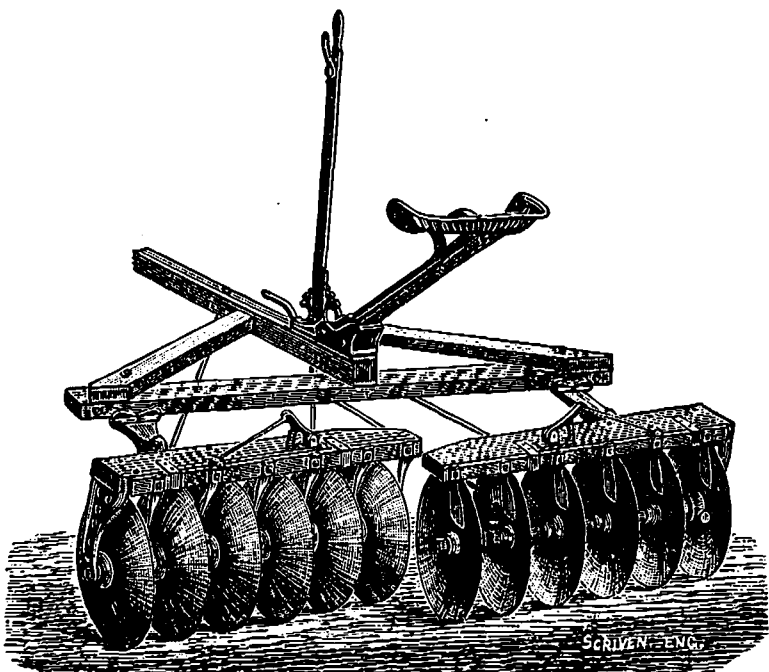
(Signed) W. F. CODY.

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**18 KING ST. EAST, TORONTO.**

PURCHASE AGENTS WANTED.

**HAMILTON HARROW.**



This is the most complete and perfect Harrow made. It has no equal in reliability and effectiveness. It is so simple in construction that it can be set up after the Tongue is attached to the main plank without a wrench.

The Discs are placed one slightly behind the other, bringing the two inside Discs close together. By this arrangement there is no part of the ground left unworked, as in other harrows. The Hamilton has many other special features, for particulars of which write to

**WILSON MANUFACTURING CO., HAMILTON ONT.**

N.B.—Owing to press of business we will not have an exhibit at any of the Fall Fairs.

**The Massey Harvester**

(Self-Rake Reaper) is a well-ried machine, this being its thirteenth season. There are some 13,000 in use at the present time in nearly every grain-growing country.



The Massey Harvester is the simplest reaper manufactured in Canada, and is at the same time the strongest and most durable. Its strength is not the strength of bulkiness or clumsiness, but is attained by the use of steel and malleable iron wherever their use is necessary with that end in view. As a Light Reaper it has no rival.



**Sharp's Rake.**

Light, strong, durable, and efficient. This is the seventeenth season for Sharp's Rake, and the number manufactured now totals up to

**38,979**

A child can dump it, either by foot or hand. Every tooth is independent. The self-dumping attachment is without cogs, ratchets, pawls, or other complications.

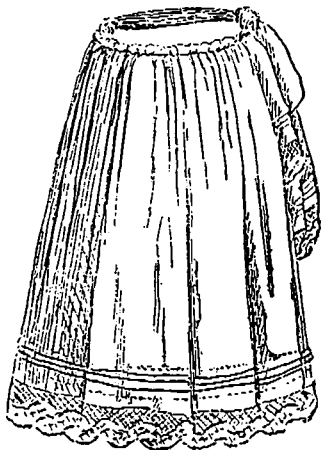


CONDUCTED BY AUNT TUTU.

(Communications intended for this Department should be addressed to AUNT TUTU, care MASSEY PRESS, Massey Street, Toronto.)

### A Dressy Apron.

THE quaint simplicity and neatness of the pretty apron herewith shown render it a charming addition to the house toilet of either maids or matrons. It is made of sheer linen lawn, but muslin, or any material thin enough to be semi-transparent, may be employed with equally good effect. The fabric selected should be neatly hemmed, tucked, and trimmed with lace across the bottom; then, before the waist-hem is made, four clusters of lengthwise tucks, three in each cluster, should be made to extend from the top downward. These should be arranged so that the three plain spaces between the clusters and the two outside spaces will all be of the same width. The two front clusters are each twelve inches deep, and the other two nine inches; each tuck takes three-quarters of an inch of the material: that is, is three-eighths of an inch wide when completed; and the middle tuck in each cluster is carried nearly an inch below those on either side of it. These tucks are very decorative,



showing so plainly in the thin fabric, and serve to fit the upper portion of the apron with easy smoothness; below them the fullness falls freely like a Spanish sounce. The hem at the top may be just wide enough to admit of running the ties through, as in the model, or it may be deep enough to form a shirr with a narrow standing ruffle for a heading, if preferred. The ties are in the form of a long, narrow sash of the same material, tucked and lace-trimmed across the ends; they are tied in a full, soft bow on one side, or at the back, according to taste. Those to whom the absence of the discarded bustle is a grievance will find the latter arrangement becoming, especially with princess or one-piece home dresses.

### Shelves with Wire Supports.

THE illustrations herewith are of designs for the support of swinging and wall shelves by wire. The swinging shelf is beyond the reach of rats and mice. The shelf, of any desired size, is hung from nails or screw-eyes by four pieces of wire. Then cross wires are put in as shown. The points of support should be a little further apart than the width of the shelf. This helps to brace it and, to some extent, prevents vibration. In this work make four supports, with loops in both ends, and be careful that they are all of equal length and all fairly straight

and free from kinks. Put the braces on last and use only one loop for them. Secure the ends of the wire on the shelf by twisting them about the nails or screws. The latter must be strong, if any great

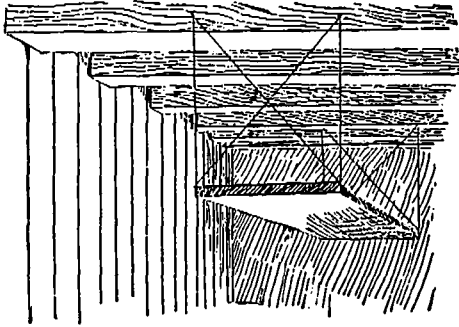


FIG. 1. HANGING SHELF.

weight is to be put on the shelf. Shelves can also be put up against the wall with wires and blocks to hold the inner edges. Nail a block to the wall

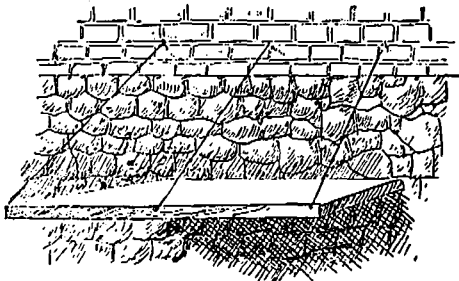
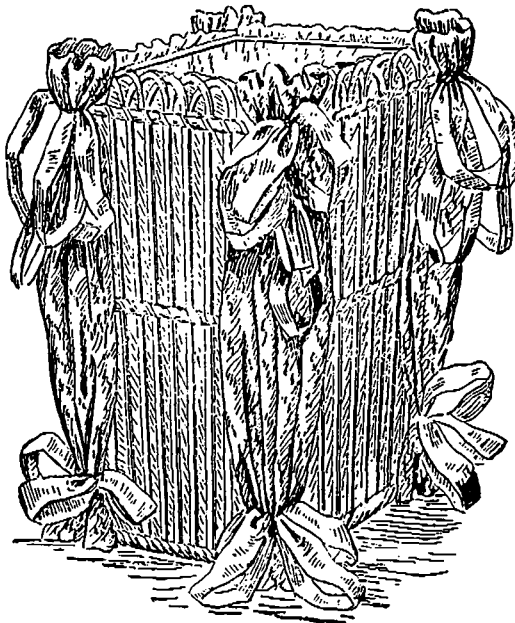


FIG. 2. WALL SHELF.

at each end of the shelf. If it is long, put one in the centre. Put the shelf in place and tack it fast with nails. Put three screw-eyes, screws or nails in the wall over the blocks one and a half times the width of the shelf, above the blocks. Fasten wires from these to nails in the edge of the shelf. A shelf can be put up in this way in less time than two wooden brackets can be made, and as quickly as it could be done with iron ones. The expense is little or nothing.

### Scrap Basket.

THIS scrap basket is a four-sided shape, in willow, and is lined with pale yellow sateen, finished at the top to form a narrow frill, a tiny band being arranged just below the frill. The outside decoration consists of Japanese napkins, arranged over the angles formed by the sides, and tied to the



basket with orange ribbons far enough from the top and bottom to form frilled edges. The ribbons are tied in long, airy-looking loops, and are of pretty width. Any variety of ribbon may be used, and the lining may be scarlet or any other preferred color.



LET HER RIP THIS HARNESS  
CAME FROM

## THE Canadian Harness Co.

176 and 178 KING STREET EAST,  
TORONTO, ONT.

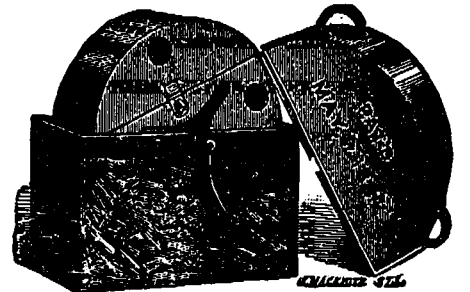
Being the Largest Dealers in Canada in  
**FINE HARNESS, COLLARS  
AND HORSE FITTINGS.**

We are in a position to give you a better article for less money than any other firm in Canada. We take special pains in filling mail orders. Send for Catalogue.

We Guarantee Satisfaction or no Sale.

We will have a full line of our goods at Industrial Exhibition, Toronto, Main Building. Call and examine for yourself.

## "EAGLE" STEAM WASHERS BEST IN THE WORLD.



Send for Illustrated Catalogue and Prices. Territory given away.

Sample Washers sent on trial to responsible parties. References required.

**GOOD AGENTS WANTED.**  
Manufactured by **MEYER BROS.,**  
87 Church Street, Toronto.

Also Manufrs. of *Wringers, Mangles, &c.*  
See Exhibit in ANNEX BUILDING, Toronto Exhibition, Sept. 8th to 20th.



**Enriches the Blood and Invigorates  
the System.**  
ASK YOUR GROCER FOR IT.

## SALESMEN WANTED

To sell our unexcelled Nursery Stock. Steady employment and control of territory. Have done business in Canada 30 years. Liberal pay to the right man. Send for terms.

**CHASE BROTHERS Co.,**  
Colborne, Ont.

# MERIDEN BRITANNIA CO.

MANUFACTURERS OF

*Electro Gold and Silver Plate.*

ARTISTIC AND DURABLE.

Purchasers are cautioned against the worthless trash with which Canada is being flooded through pedlars and unprincipled dealers.

If you want the best goods that can be produced see that this



is stamped on each article.

Also *KNIVES, FORKS, and SPOONS* stamped  
**"1847 ROGERS BROS. XII."**  
 are genuine Rogers' goods.

## REGISTERED SHROPSHIRE RAM LAMBS

Can be engaged for a season of service by responsible farmers.



REGISTERED SHROPSHIRE, REGISTERED MEDIUM YORKSHIRE, REGISTERED DORSET SHEEP.

—ALSO—

Registered Shetland Ponies and Jersey Stock. ALL AGES.

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STOCK SUPERIOR. PRICES MODERATE.

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## Ontario Veterinary College,

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Patrons, Governor-General of Canada and Lieutenant-Governor of Ontario. The most successful Veterinary Institution in America. All experienced teachers. Classes begin October 22nd. Apply to the Principal, Professor SMITH, V.S., Edin., Toronto, Canada

# BELTING.

If you want the Finest Threshing Belt made, ask your dealer to get for you the

## "MONARCH" BRAND

IT WILL COST MORE AT FIRST, BUT WILL BE ECONOMY IN THE END.

MANUFACTURED SOLELY BY

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43 Yonge Street, - Toronto.



Every Stable should have Peerless Hoof Ointment.

ROGERS' PEERLESS MACHINE OIL is specially manufactured for Farmers' Machinery, and excels in all the qualities necessary for Farmers' use.

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Established 1864.

The Standard Instruments of the World.

Tone Pure and Sweet, Touch Light, Durability Unequaled, Workmanship and Material First Class, Constructed on Modern Principles.

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AUTOMATIC FOLDER,



**Double-Acting Perpetual Hay and Straw Press.**  
 A Machine imitated but not equalled, Baling Hay or Straw faster, more compact, easier, more economically (to load 10 to 15 tons to the Car) than is done with any other so warranted or no sale. Circulars mailed free, address GEO. ERTEL & Co., London, Ont. or Quincy, Ill., U. S. A.

1881. 1890.

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Life Insurance at about One-Half Usual Cost.

Cash Reserve Surplus, - \$2,500,000.00  
 The Central Trust Co., of New York, is the Trustee of its Reserve Fund.  
 Paid in Death Claims, over \$8,000,000.00  
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The Peer of any Life Insurance Organization Existing.

ITS FOUR CARDINAL POINTS:

HONESTY, - PRUDENCE, - WISDOM, - EQUITY.

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Competent Men can Secure Liberal Contracts.

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For Further Information, apply to

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 J. D. WELLS, 217 St. James Street, Montreal.  
 A. R. McNICHOL, McIntyre Block, Winnipeg.

## WILKIN'S POTATO DIGGER.



It raises the drill, casts off the sides, cuts its way through weeds, shakes the potatoes to the surface with its double-acting prongs.

ALEX. WILKIN, London P.O., Ont.  
 Free Circular.

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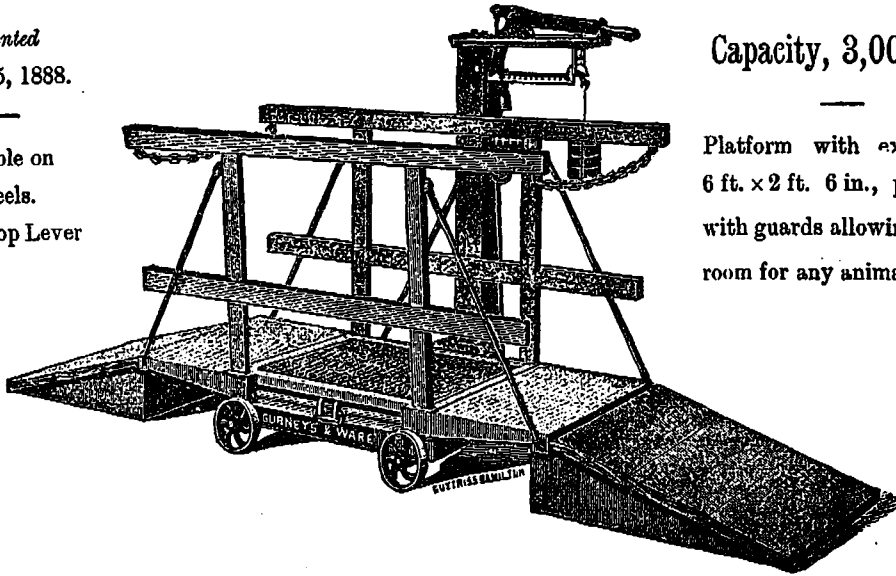
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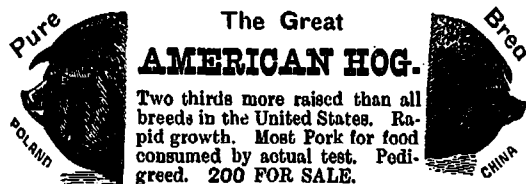
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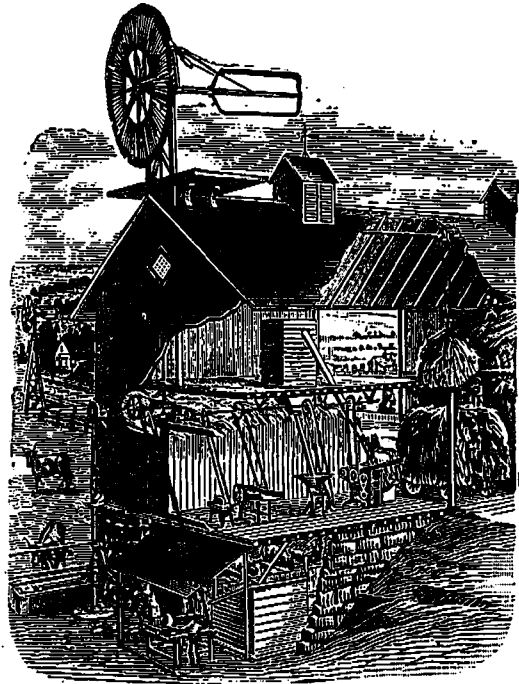
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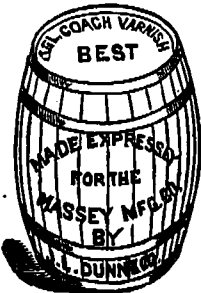
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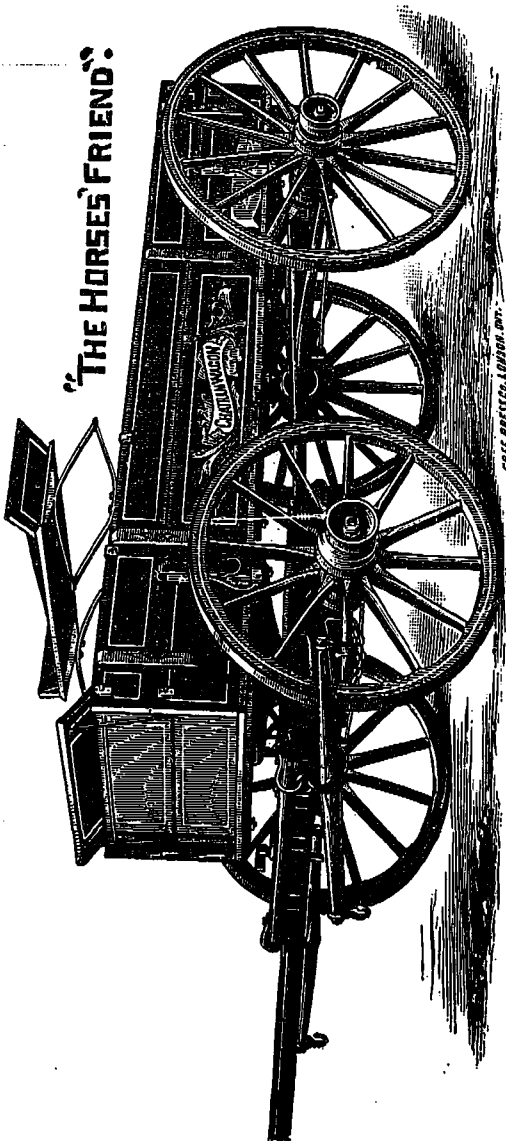
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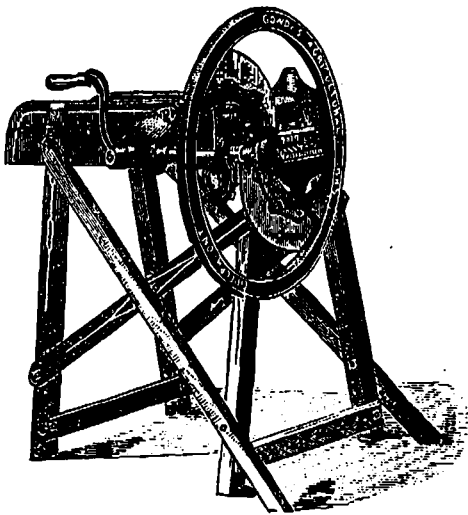


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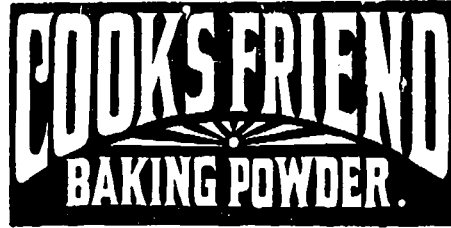
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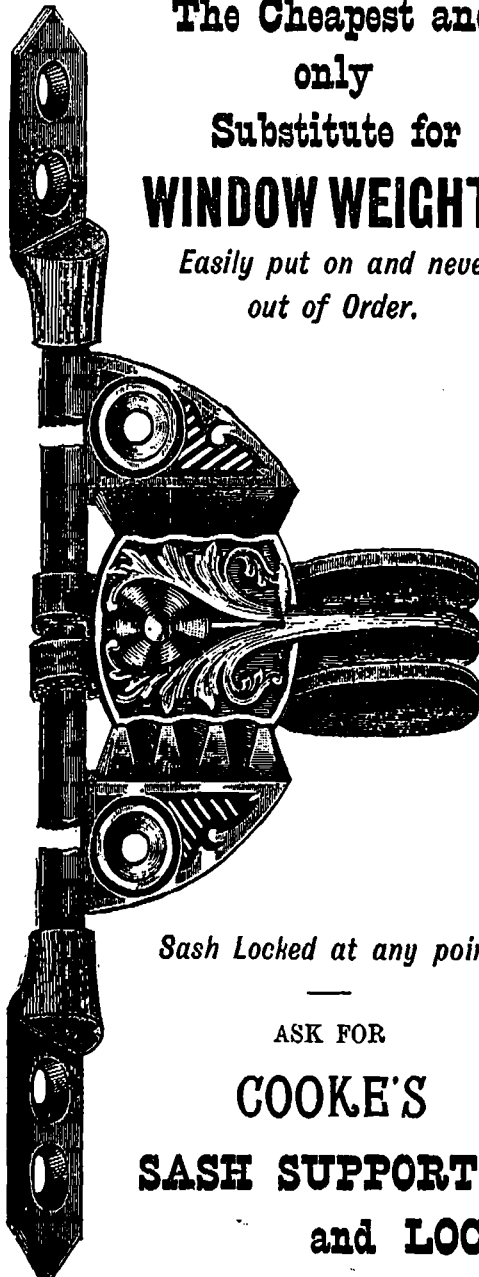
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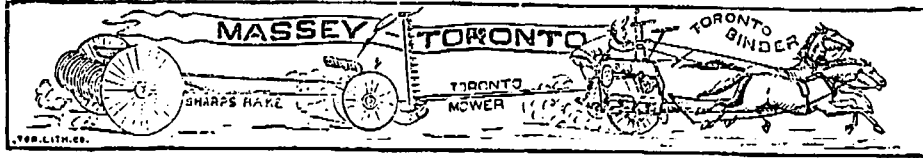
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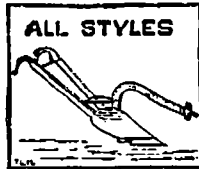
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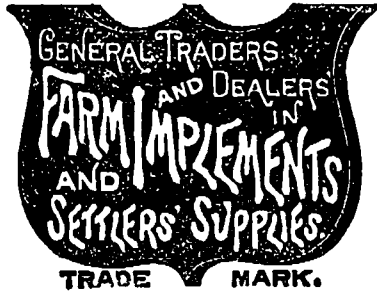
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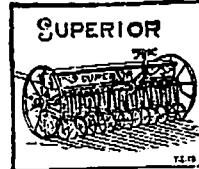
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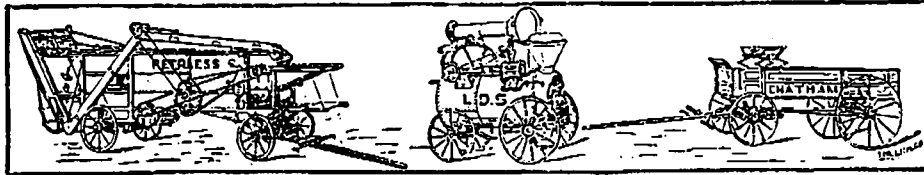
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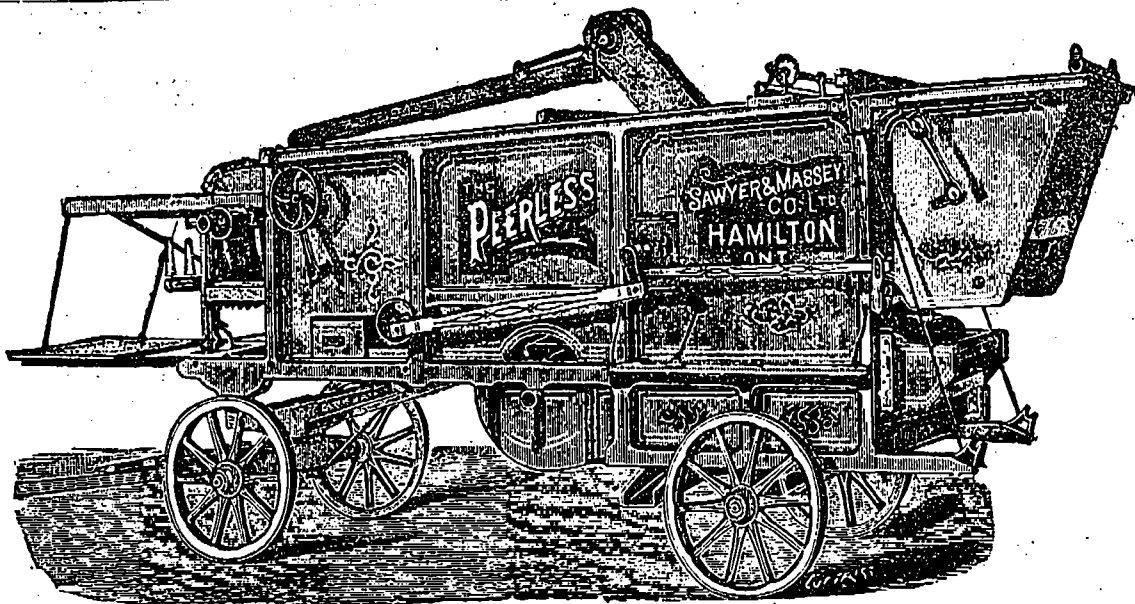
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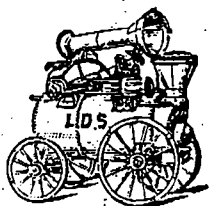
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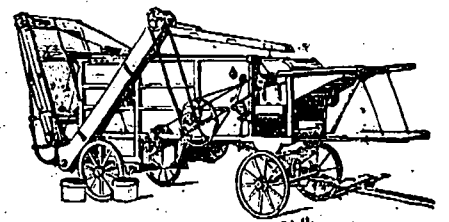
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