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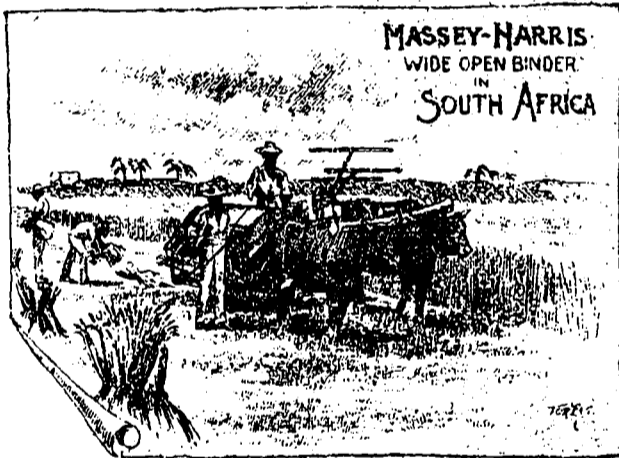
Massey-Harris Wide-Open Binder.



A GROUP OF WIDE-CUT MASSEY-HARRIS BINDERS AT WORK ON A PRAIRIE FARM, MANITOBA.

In these days it is not sufficient for a manufacturer to broadly state that his machine is "the best," and to illuminate his catalogue with pretty pictures of "the best" binder, without giving definite and conclusive reasons showing wherein his machine excels. Simple assertions as to superiority do not count for much unless backed up by practical and logical indications of genuine merit. The farmers of to-day are abreast of the times; they are wide awake to their interests; they now use implements so largely that they know what is and what is not an improvement in appliances calculated to lessen their labors, and they are quick to discern where real advance is made by the inventor of farm machinery.

In our catalogue (sent on application) descriptive of the **Massey-Harris Wide-Open Binder** we have endeavored to present some reasons which justify us in asserting that it is the best Self-Binder in the world in every sense of the word, and further, that it has many invaluable features to be found on no other machine, which we were the first to



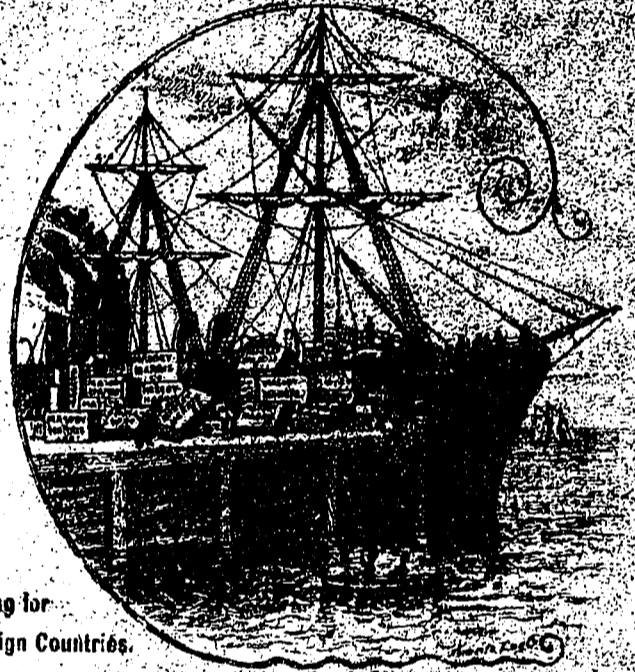
MASSEY-HARRIS WIDE OPEN BINDER IN SOUTH AFRICA

introduce and perfect; the patents for which are owned and controlled by us in all countries, and therefore cannot be used by any other makers.

The immense and constantly increasing popularity of our Wide-Open Binder is no mean testimony to its worth. Its principle is right and it is just what was wanted; consequently, as soon as it was offered for sale there was universal demand for it. Though it was only perfected in the harvest of 1891, there were **12,000** used in the grain fields of the world during the season just passed. It has been used in every kind and condition of crop in all grain-growing countries, and has never failed to do all we have claimed for it. Its record has been simply marvellous. Immediately recognizing its peculiar advantages over any other machine previously brought out, farmers and agents the world over have been enthusiastic in their praise of its admirable construction and unequalled field work.

It is an old saying, and not the least true, that imitation is the sincerest flattery. In this case, six or eight harvesting machine manufacturers in England and the United States have added testimony to the worth of the product of our brains and money. But few people, however, know the amount of both time and money that have been expended by our large staff of inventors in bringing

now celebrated **Massey-Harris Wide-Open Binder** to its present perfect state. None better realize the value of our machine than our rivals, and their anxiety over our achievements and general advancement is indicated by their efforts to reproduce our ideas, to-day no less than five or six of our largest United States competitors to say nothing of several British makers, have each one of our



Loading for Foreign Countries.

Open Binders set up in their experimental rooms. One manufacturer thought to profit himself largely by our achievements, but thanks to foreign patent laws he now has an experience which cost him seven thousands of dollars—an experience which other makers may well heed. Our devices are fully protected by Letters Patent in all countries. These would-be copyists beware!

It is quite plain that the advent of the **Massey-Harris Binder** in foreign countries has created no small stir amongst dealers and manufacturers who previously controlled that trade, and they now fully realize it has come to stay. They find that the "Canadian" "David" is no match for their boasted "Goliaths"—that our Wide-Open Binder is master of the situation. It is in every way a triumph.



Massey-Harris Co., Ltd. (Incorporated in England)

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(PUBLISHED MONTHLY.)

A Journal of News and Literature for Royal Homes

NEW SERIES.]

TORONTO, CANADA, APRIL, 1893.

[Vol. 5, No. 4.]

TWO TECHS ABROAD.

IN FIVE CHAPTERS.

CHAPTER II.

TORPEDOING A "FIRE WELL."—Continued.

As dinner proceeded Lee Wung talked more and more freely, speaking in English, not perfectly, but well enough to be understood.

"I like America," he said to us, "But you have so much restlessness! You need little Buddha, little Kung-fut-zee (Confucius) to make repose in your mind. I study all about Christ, Moses, Mohammed. I study Plato, Aristotle, Epicurus. I study all you American and English doctrine—Calvin, Luther, Wesley, Edwards.

"When I visit London two year ago I go hear Spurgeon once, and I hear Talmage in New York—Brooklyn. I laugh. All great nonsense. Kung-fut-zee say same thing, too, just about, long ago. Our priests say same. All say what we must do tree thousand year after. No change. Get worse all time. Doctrine never do any good. I laugh.

"You send four hundred missionaries here! Missionary come say, you are all wrong, all heathen, all go to bad together, unless we tell you better way. So they pleach doctrine to us. But we as wise as you.

"But I laugh. I say to our scholars let missionary come. No do much harm. Same old story. Same old doctrine. Dese Western people have *chi*, restlessness. Must do something; they send missionary."

Wright glanced at me with a scandalized expression.

"What is your belief?" he at length asked. "Oh, not very much belief," Lee Wung replied, smiling and turning to take a lighted cigar from the servant who stood at his right hand. "I study Shop-en-how."

Wright and I understood that he referred to the German pessimist philosopher, Schopenhauer, but Frost, as it turned out later in conversation, thought he meant some Chinese skeptic.

"I study all your Western science," continued Lee Wung, setting back and watching the curling rings of smoke from his cigar. "I believe Shop-en-how quite right. He say living not worth the trouble of it. I think that, too. Biology tells us earth grow old, like old man, ble, dried up, 'played out,' you say. Sun do not keep him very warm now. Get colder all the while. By and by no life here at all. All die out.

"China old, 'played out,' now. People poor, sick, no hope, diseased, live on opium, don't rise. China never rise again. What's use have money? So I say have good time. Take life easy. Spend all the money I can. Have good time. All die out pretty soon. What's the use of your money? Never be better. Get worse all time."

These pessimistic doctrines which Lee Wung had picked up in Europe and America tended to render him careless of the lives of the thousands of people whose lot is involved with his. Having no faith that their condition can ever be improved, he smiled when a hundred thousand of

them perished, and said they were better dead than living.

This impassivity Frost regarded as downright wickedness. Wright called it Schopenhauer, and declared that Lee Wung's desire to make money to spend in Parisian luxury was but another side of the same evil philosophy—a philosophy of death instead of life and progress.

Notwithstanding his disapproval of our "restlessness," Lee Wung insisted that we should set off early next morning to see his salt-mines on the river Min. The young mandarin at breakfast explained to us that he wished to increase the revenues on all his possessions, and

therefore employed foreign engineers and appliances, but must do so in a quiet way lest he should arouse prejudice.

He made his points with clearness and sagacity surprising in one of such effeminate habits and bad principles. In conclusion he directed Frost to give Wright and myself each a draft on Shanghai for a thousand taels—a little over one thousand dollars—for three months' service in advance.

We went with Frost up the River Min, and reached the six villages where the brine wells are located late that afternoon. At a Chinese inn near by we were furnished each with a room



Easter Song

Clear in the soft warm sunshine,
The Easter hymns are ringing,
The low note of a spring bird
Chimes with the children's singing
"To Thee
The praise!"

The lilies snowy whiteness
Shines out to grace the day
May the children's hearts be always
As pure and fair as they.
"To Thee
The praise!"

I.R. Ooig

and mattress, and Chinese food, with fowls and venison for the sum of two hundred and fifty *tsien*, or about twenty-five cents, per day.

Next morning at six we went to the wells, having instructions of the kind that delight an engineer's heart, namely, to proceed as we pleased and increase the output of salt from the works.

The wells are on a gentle slope from a range of low hills to the bank of the stream. We found that all the brine was being taken from four wells each six inches in diameter, and ranging from thirteen to eight hundred feet deep. At this depth a strong black brine is struck, which was drawn up in a bamboo bucket twelve feet in length, by means of a plaited bamboo line, attached to an upright revolving wooden drum, twenty feet in diameter.

The motive power for hoisting is a large clumsy animal, called a "water buffalo," which is harnessed to the drum and driven around it at a gallop. Each well has a frame or derrick built over it for the gear of the hoist.

From the well the brine is led in bamboo tubes to a row of small furnaces of brick, on each of which is set a clumsy, cone-shaped, evaporating pan of iron, weighing about fifteen hundred pounds. The fuel used is coal from mines near by, and the Chinese process is to heat the pans and slowly pour in the brine by the ladleful.

Thus managed the salt forms in a cake. Freed from the pan by being struck with hammers, the salt is carried on the backs of porters to the river, where it is loaded upon junks.

In China the sale of salt is a government monopoly. Its price is generally not far from three cents a pound. Frost told us that Lee Wung received nearly this price for the output of about four tons per day, and that his profit

on this was about one hundred dollars. Frost added, as a bit, that Lee Wung expected us to double this revenue in the course of six months.

"Easy job, eh?" Frost remarked, as we laughed.

"Well, I should think so!" exclaimed Wright. "If the brine supply is all right it will be strange if we cannot run up the output tenfold in two months!"

"Ah, but you don't see the point of my hint, you are to *double* it, no more, in six months, see? This is China. Don't try to astonish any one with any American smartness here. Go easy. And when you get a 'pointer' from Lee Wung, steer by it. The little rascal knows what he wants."

An interpreter was placed at our service, and Frost then left us, having explained to the Chinese superintendent of the works that we were to be obeyed.

After looking about for two or three days we directed the making of a pump similar to the pumps used for raising brine and petroleum in the United States. This occupied us four or five days, for we had to weld rods and, in fact, construct nearly every essential thing.

When the pump was completed we set up the boiler and engine which Frost had purchased at Nankin, made steam, and to the admiration of the Chinese fireman, pumped out as much brine in an hour as the old water buffalo could haul up in the bamboo bucket in a day.

We next set masons at work and built a large new reservoir for holding brine, then built another row of little brick furnaces where, one by one, we placed new evaporating pans, till we had doubled the number and were turning off about eight tons of salt a day.

Under our instructions we could not do much

more than make an extended weekly report to Lee Wung through Frost, who constantly cautioned us to "go slow," and do nothing which would attract attention from outside the villages where the salt wells were.

This sort of thing became so tedious, after some weeks, that we thought seriously of throwing up our situations and salaries, and would have done so had not Lee Wung sent us elsewhere. Frost brought the *Little Dragon* up the Min, and we ascended this large, deep river for a thousand and fifty miles, all the way through the busiest country we had ever seen.

This single Province of Sz'chuen, a little larger than Prussia, has a population estimated at over sixty millions, and is one of the most fertile, well-watered, picturesque, and beautiful regions of the whole earth. After having seen a good deal of it we made an overland journey in sedan chairs, for the weather was now very warm, to Lee Wung's brine wells on the To-Chiang River, another great tributary of the Yang-tze.

The fuel used under the pans here is natural gas. The head-man informed us that, occasionally, a well drilled for brine had proved to yield a kind of thick, green-black oil, and much gas. The oil, which was manifestly petroleum, ceased to flow after a time, he said, but gas continued to issue from many of the holes. These are known as "fire wells."

Two of them, near the group of nine wells owned by Lee Wung, have been securely capped over with brick and coats of lime. They have large lime-coated bamboo pipes leading to the furnaces, and are fitted with iron burners under the pans. Gas had been drawn from these two "fire wells" for thirty years the workmen informed us, but the gas now often



AN EARLY MORNING START WITH WIDE-CUT MASSEY-HARRIS WIDE-OPEN BINDERS. SANDERSON'S FARM, NEAR BRANDON, MAN.

Photographed by J. A. Brock & Co., Brandon.

failed, and at such times the work of evaporating ceases. It was to look into the stoppage of the gas supply, which entailed a loss of ten or twelve thousand *taels* a year, that Lee Wung had sent us here.

After learning what we could from the Chinese workmen, we set to work on a torpedo to explode the bottom of the "fire well." This involved a long period of waiting for a proper explosive, and left us much time to look about and talk about what we had seen.

"It is my opinion that we are standing over one of the earth's great subterranean deposits of petroleum and natural gas," Wright said to me one day. "This whole district between the Min and To Chiang overlies gas and petroleum, as well as coal and brine. It offers unlimited wealth; are we the men to get hold of it?"

"We!" I cried.

"Yes. We see what the Nobels did at Baku on the Caspian Sea! They were foreigners in Russia, but they got a grip on Russian petroleum and still hold it. Why can't we do the same here? Cheap kerosene and cheap petroleum fuel for steamers on the Yang-tze and Hoang Ho, in such a populous country as this, means millions of money!"

That night we pictured ourselves the magnates of a vast future industry, but next morning we forgot these visions in finishing the torpedo.

For "torpedoing" the "fire well," we had neither dynamite nor any facilities or material for manufacturing nitro-glycerine. But we had learned that it was possible to procure a brown gunpowder, known in Sz'chuen as "Pho powder"—an explosive of good quality, which, singularly enough is made not by the Chinese, but by a barbarous tribe inhabiting the mountains beyond the Mia.

After some delay, three hundred catties of Pho powder had been procured. Not being able to make tin cases, we spliced together two old bamboo brine buckets, each twelve feet in length by five and a half inches in diameter, to contain the explosive. A detonating cap and rod were embedded in the powder; and after sounding the well carefully, the torpedo, containing about eighty catties of powder, was lowered to the bottom.

For a "striker" or exploding hammer, we made use of a fifteen-pound iron weight dropped down the well-shaft a distance of four hundred and seventy-four feet. We had a great deal of trouble with it, from hitching, and were obliged to haul it out with a hook and line four or five times.

After three hours, during which time half the powder must have been injured by the dampness, the primer was struck and an explosion followed, which involved consequences we had not the sagacity to foresee.

CHAPTER III.—AN OIL-WELL FIRE.

In our experiment at the "fire well" on the To Chiang eighty catties of powder were discharged, but we scarcely heard the dull explosion in the earth beneath. The fires at the neighboring salt-evaporating furnaces had been extinguished in expectation of an uprush of gas, but nothing of the sort ensued.

When, after an hour, the well was sounded to a depth of thirteen hundred and twenty feet, the plumb struck something solid. On withdrawing it we found that the well was slowly filling with petroleum.

"I guess we have killed the gas-well, Ferd," said Wright, "and turned it into a slow, dumb sort of oil-well of little use. It's a queer mixture of brine and oil underneath here."

Within seventy feet of the torpedoed gas-well was a still older one which had failed forty years before. Stones had been driven into it to close the orifice. We set men to dig it out to a depth of fifteen feet below the surface.

These men were busily at work at this task when they were suddenly driven out of the pit by an issue of gas in quantities more than sufficient to supply the salt works. As soon as possible we "capped" the well and laid pipes to the furnaces.

It was plain that our torpedo had started gas in this old well. Feeling now a little more hopeful of success, we rigged a lever and "jumper" drill—in the Chinese fashion, for we had no steam boiler—over the first well, and set four laborers to drilling out the deep obstruction that we had found after the explosion. They could drill nearly six feet per day, rather more than half the time being required to clear the hole of grit. On the fourth day they broke through the obstruction into a cavity seventy feet in depth under it, and the gas again issued plentifully from the well.

We were extremely curious to know what was beneath the brine-bearing stratum, for here the gas and oil appeared to lie beneath the brine measures; but we had no steam, and without it could do very little.

When Frost returned from a business trip to Ching-too Foo, the provincial capital, we consulted with him. As the difficulty of procuring a steam boiler from Shanghai was well nigh insuperable, we proposed that the *Little Dragon* be brought up the river and her boiler removed

to the salt works. Frost ordered that this be done.

With the boiler on the ground, Wright and I undertook the task of constructing an American jointed drill, "sinker bar," "jars" and sand pump, such as our engineers use in drilling artesian and oil wells. At this we labored for a month at the Chinese smithy, and in the end produced an apparatus which would answer our purpose. Setting up a derrick over the "fire well," we began to drill it deeper by steam.

For a hundred feet lower in the well the drill pierced a black shale. Then it passed through a thin coal measure, and bored hard sandstone again for over two hundred feet. Below this there was a stratum of black, very hard, refractory slate, forty feet thick.

"We shall strike oil when we get through this slate," Wright predicted. We took every possible precaution, even to digging a ditch out into the valley of a little brook near by to carry off the waste oil.

But the drill went through into shale with no



signs of oil, and for three days, working day and night, we bored through another thick shale measure. Frost, meantime, was obliged to go to Chungking.

At ten o'clock in the evening of the twelfth of June the drills entered another hard stratum of slate. Wright, who was at the wells at midnight, concluded that there would be at least twenty-four hours' work in slate, so he came down to our lodgings in the village, near the river and we went to bed.

Shortly after five o'clock next morning a messenger came from the well to wake us. The foreman had sent him in haste to fetch the "Yangjen" (ocean men), as we were commonly called by the Chinese operatives. His voice had that peculiar screech which indicates excitement in a Chinese, and he bawled out something about "black oil from the earth."

Wright hastily threw on his coat and ran out. "Shade of Kung-fut-zee!" he cried. "We've struck it at last!" On coming out, I heard a roaring noise in the direction of the wells.

"It's a gusher and no mistake!" Wright panted out, as we ran up the ascending path. "A regular Venango County spouter—I know by the sound!"

It was not yet light, but we expected every moment to see flames rise ahead, for we knew the boiler fire must be going. Reaching the well, we saw a dark, spattering column gushing up through the derrick frame and flying out on all sides.

Ten or a dozen of the workmen were running about, shouting to each other; but the foreman, with wonderful pluck and presence of mind, and at the risk of his life, had contrived to drown out his fire from a neighboring water-tank.

The oil was ankle deep about the engine and had begun to run down the slope. We opened a ditch for it down the hillside into a small brook, where, a little lower down, there was a dam for a water wheel, used in irrigating paddy fields and poppy plats.

By daylight we had the oil stream directed into this little pond, then set men to strengthen the dam and build it higher. A series of these small dams extended down the brook for a mile, to the point where it joined the To Chiang River. As the brook was almost dry, we hoped to hold the oil in these dams until we could cap the well.

"It's a twenty thousand barrel-a-day spouter!" Wright exclaimed. "There's a regular Oil Creek lake of it underneath. If we can handle it, Ferd, we shall be millionaires ten years from now! But if we can't it will drive us out of China! And we shall be lucky if we get out with a whole skin."

We forbade any one to bring fire near the place, hauled away the boiler and engine, and set at work to clear up the derrick, dig a square pit about the mouth of the well, and fill in with stone and mortar in order to obtain a solid border for a "cap." We had literally to work knee-deep in petroleum, in an atmosphere which was half gas. Several of the laborers succumbed, and had to be carried away.

By hard work we constructed a curb of split stone to a depth of six feet about the orifice during that day, and then attempted to cap the jet by placing one of the fifteen-hundred-pound salt pans, bottom upward, over the well, with the edges resting on the split stone curb; but the force of the jet was so great that this heavy pan was tossed off like a feather.

Then we drew logs and stones to the place, and arranged two pans of different sizes, one over the other. A crane was set up, by means of which these heavy pans were lowered upon the orifice of the well and "swaged" down. Beams and stones were also piled upon the pans. Apparently we had succeeded.

"We've a stopper on it at last!" Wright said. We cleansed ourselves as well as we could, and went home to change our clothing; but while we were at dinner, Shen-ta-tze, the young launch engineer, come down to say that the oil had begun to work out on one side of the stone curb! Before we could reach the well the stream had burst through the ground, and was

again roaring like a cataract! As our workmen were tired out, and Wright and I much fatigued, we had to let the oil run all night, during which time it nearly filled the little pond above the dam in the brook.

There were some seven or eight hundred Chinese in the little villages along the brook, below the dams where the irrigating wheels were placed. These people were much incommoded by the oil on the water. We sent the foreman around among them to explain it would flow for but a little while, and begged them to have patience.

Next morning Wright and I donned our greasy suits once more, mustered all our help, and began to clear out our broken curb, dig deeper and lay a second one from a greater depth in the ground about the well.

One who has had no experience with the powerfully spouting oil-well can form little idea of the magnitude of our task. We were compelled to work in oil-slush knee-deep and half-choked by gas.

All the stone work previously put in had to be taken out. We then dug around the orifice a circular pit, ten feet in diameter and sixteen feet deep.

An iron tube six inches in diameter had now been cast for us at the salt pan foundry. As soon as the jet had been conducted upward through this from a depth of sixteen feet, we filled the pit around it solidly with stone and mortar. But these operations, under such conditions, occupied much time.

Half our Chinese workmen failed us on account of the gas. One actually died from asphyxia, and several ran away. Wright and I worked fifteen hours a day, even laboring with picks and crowbars ourselves. It was only by this example that we kept our men at the task.

The case was urgent. A stream of oil was rushing down into the little ponds during all the four days we were at work on the curbing. The first and second dams were brimming full, and the third was filling rapidly.

We had twenty men at work strengthening this, the lowermost of the dams which held back ponds of much capacity. We dared not open the gates and let the oil go down into the river, for the To Chiang here is navigable, with scores of junks and sampans constantly going up and down.

Toward evening of the fourth day we completed the curb, rigged a stronger crane, lowered upon the jet the two inverted salt pans, the inner one of which was filled with a huge pad, and then piled six or eight tons weight of stone and timber upon it.

The stream was checked, the flow ceased, and there was no further indication of its breaking out around the curb. By this time it had grown dark.

Wright threw down his crow-bar, and shook his fist at the oil fountain.

"At last we've got you choked off!" he exclaimed, grimly.

We were both smeared with oil-slush, and tired out. Our men were quite useless. We sent them home and bade them rest a day, and then went to our own lodgings, took a bath, ate a light repast, and went to bed. We had slept scarcely an hour continuously, for four nights.

But the evil fortune which had attended every step of the work, since the "fire well" was torpedoed, had still a worse trick in store for us. The very disaster which we had been so carefully guarding against happened. Not long past midnight we were roused from deep sleep by a tremendous outcry at our doors. With a groan Wright rose and looked out.

Up the valley of the little brook in the direction of the dams, a red glare shone on volumes of rolling black smoke that seemed to fill the whole sky.

My much-tried comrade uttered an exclamation so vehement that I turned out instantly. We threw on our oily garments and set off at a run with fully a thousand Chinese, men, women and children, all running, screaming, yelling at the same time. As nearly as we could learn from subsequent inquiry, the fire had started in this wise: From the third or lower

dam, a bamboo pipe had conducted water for irrigation to a terrace of paddy. In repairing the dam our men had overlooked this old pipe, whose pond end may have been concealed by weeds.

During the evening, as the oil rose in the pond, it reached the open end of this pipe and ran through it down to the terrace, which it presently overflowed. Then it went trickling down a bank into the back yard of a Chinese hovel. It chanced that women had been boiling something in a pot over a fire there, and that embers remained sufficient to ignite the oil.

By the time Wright and I arrived on the scene, after a heating run of half or three-quarters of a mile, not only the lowermost pond of oil, but the one above it was on fire, blazing and spouting up enormous clouds of inky-black smoke. We thought that perhaps we might save the uppermost of the three ponds, and ran up to the salt works, near the wells, to bring shovels with which to throw earth.

But before we reached the oil stream between the middle and upper ponds, the fire had ascended to the base of the upper dam, and streamed up the greasy gates, and over the wooden waste-way of the flume where the water-wheels are placed.

The flame rose thirty feet high here, and at once leaped to the level of the upper pond.

Wright turned coolly around, and went back up the hillside. "We may as well sit down on a stone and whistle Yankee Doodle," said he. "It's all going to burn. Let it burn, and good riddance!"

If the oil and nothing more would have burned, this would, indeed, have been an easy way out of our difficulties. For some moments we sat and watched it blaze, and listened to the roar and the shouting and yelling.

For miles on each hand, north and south and from on the river To Chiang and across it, the hullabaloo rose, and was answered from near and far. The whole population, for a great distance around, appeared to be awake, and coming as fast as possible.

Little wonder, too; for a vast glare had risen to the heavens, and shone on the white pagodas upon the hilltops around.

What will come of all this is more than I can tell!" exclaimed Wright, with a comically uneasy glance at me. "If, when all these people get here, they should happen to take a notion that you and I did this for mischief, they may start a 'foreign devil' hunt. What do you think? Wouldn't it be advisable for us to start for Shanghai?"

But immediately we had need for active exertion to protect the salt works, for the fire ran up the hill over the oil-sodden ground. Old Lun Yen Che, the foreman, and his son, with the engineer and the captain of the launch came to our assistance, and all our shovels were kept busy. By dint of hard work we succeeded in keeping the fire from the wells.

But, meanwhile, a fresh disaster had fallen—one that really wrought much damage. The fire at the ponds burned away the wooden gates and flumes of the dams. As we were throwing earth on the blazing ground near the wells, we heard a fresh outburst of shouting through the villages below the dams. Stopping to learn what new trouble had broken out we saw that the blazing ponds were running out, and that a stream of burning oil was pouring down the bed of the little brook to the river!

While we stood watching it, a cabin near the foot of the third dam caught fire, and a moment later another, a little way below it, burst into flames. A great crowd of Chinese had gathered. We could see some throwing earth, and others bringing water from wells. The fiery torrent, belching smoke and flame, rolled on down the valley, and soon a wharf at the river side and half a dozen sheds and houses were ablaze.

We were too fully occupied fighting fire at the wells to attempt to give assistance to the villages, but we sent the launch captain among the people to pacify them, if possible. He told them that the "Yangjen" were working hard to save the salt works where many of them were employed.

The burning oil actually spread out upon the river, and blazed for half a mile below the point where it issued from the valley of the brook. Boats and junks, moored along shore, were got off in haste, and for a time the shouting and confusion on the river quite equalled that on the shore.

By daybreak the most of the oil had either run out of the dams, or had burned up, but the very ground was on fire, and continued to blaze and smoke for hours. We went about assuring the people that their losses would be made up to them, and that plenty of work, at better prices, was sure to come from the discovery of the oil. Still their lamentations did not cease.

Such was the condition of affairs, despite the best face we could put on the accident, when George Frost came back from Chungking, bringing an urgent message to us from Lee Wung in Peking to proceed down the Yang-tsze, in the launch, to Yang-chau, and thence come up through the Grand Canal, into the Hoang Ho or Yellow River, which was threatening to overflow its embankments throughout Honan.

Lee Wung was connected with Wo Hei Feng, the imperial Mandarin whom the "Son of Heaven," the Chinese emperor, had recently commissioned to dike the Hoang Ho, and avert the catastrophes which periodically attended the floods upon that great river.

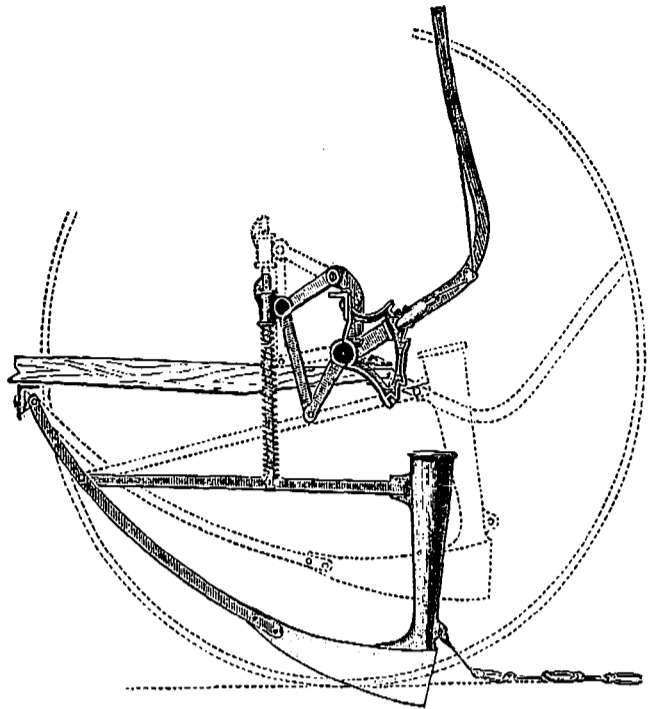
(To be Continued.)

The Question of Shoe Drills.

PEOPLE'S ideas differ greatly as to the best method of sowing seed grain. While it is true that climatic changes and differences in soil may require slightly different methods of putting in the seed, it is found that in two separate districts, though the same conditions exist, and for that matter in the same territory, one farmer will advocate drilling and another will advise broadcasting, while still another farmer will go in for a Shoe Drill. There are good arguments in favor of each of these methods, though there can be little doubt that the best results can be obtained in sowing the seed in drills, that is, with either a Hoe or Shoe Drill; and recent experiments seem to indicate that the latter is likely to become very popular. The development of the Shoe Drill has been steady and sure, and notwithstanding it is somewhat higher in price than any of the three kinds of machines mentioned, it possesses some great advantages over the others which highly commend it.

The new Massey-Harris Shoe Drill is a model in appearance as well as in operation. It is simple, light, very easy to handle, easy on

the team, and its work is of a character that challenges criticism. This machine can be made to do good work where no other drill will operate. On land where a long stubble has been lightly plowed under, or where there are heavy clumps of sod or grass, the Shoes will cut through or ride over it with the greatest facility. The shape of the Shoes and the Draw-Bars is such as to cause them to pass over any obstruction without the least difficulty. Again, in certain kinds of soil the hoe points of a Hoe Drill will gather the sticky clay and are unable to clean themselves, which results in clogging up and stopping the team. The knife edge of the shoe of a Massey-Harris Shoe Drill will, however, cut through such soil and cause the sides of the hard steel shoe plates to clean perfectly. Thus it is quite possible to sow on wet land with one of our Shoe Drills when a Hoe Drill could not be made to work. It is possible, also, with the new Massey-Harris Shoe Drill to sow the seed at a more uniform depth than with any other machine yet invented. Not only may the seed be sown deeper than with any other drill, but it is also possible to sow nearer the surface, and, at the same time, to cover it perfectly—a great advantage when putting in certain kinds of seed. The seed grain being sown in the track or cut made by the shoe, is planted in very even, straight rows; hence the rows can be closer together than is otherwise admissible. The rows on the Massey-Harris Shoe Drill are six inches apart. Where the soil is well cultivated, the earth falling back in the track of the shoes will automatically cover the seed, but as an additional provision a length of chain is attached to each runner, which covers the seed perfectly, no matter what the nature of the soil. Experience has taught, too, that the cut made by the shoe presses or packs the earth each side of the cut, so that when the seed is covered in, high winds will not uncover it, as is the case when sown by other methods,—a difficulty which has hitherto been very hard to overcome on prairie lands.



This shows the action of the Lever. Shaded portions of cut show the pressure applied, and the dotted lines indicate the position of the lever and parts when shoes are lifted for transportation.

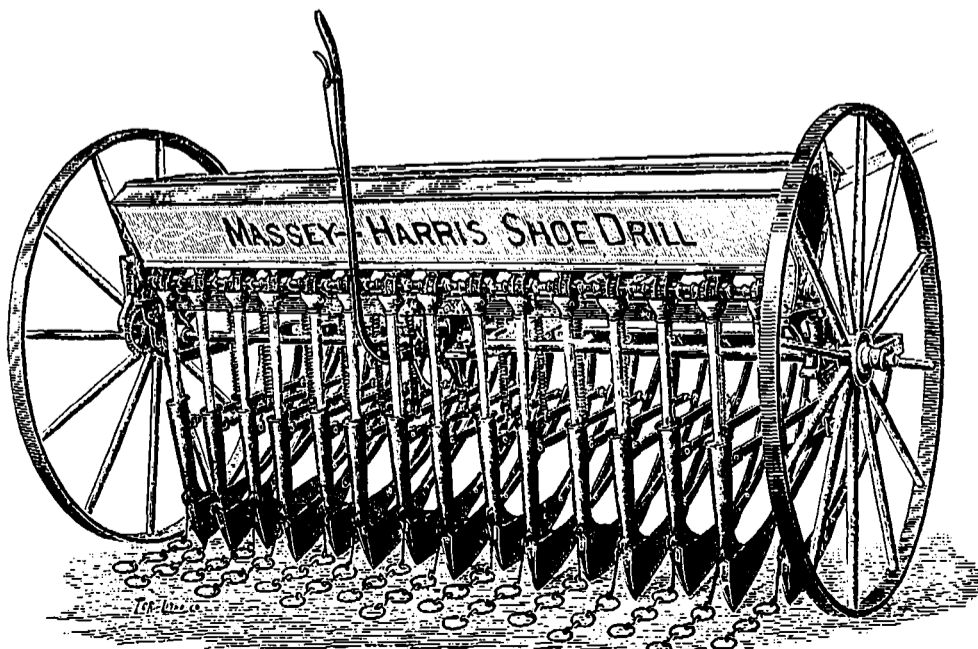
There no longer exists any doubt but that in many sections this class of Drill is the most profitable to use, and we therefore give illustrations and brief description of the latest and greatest triumph in seeding machinery.

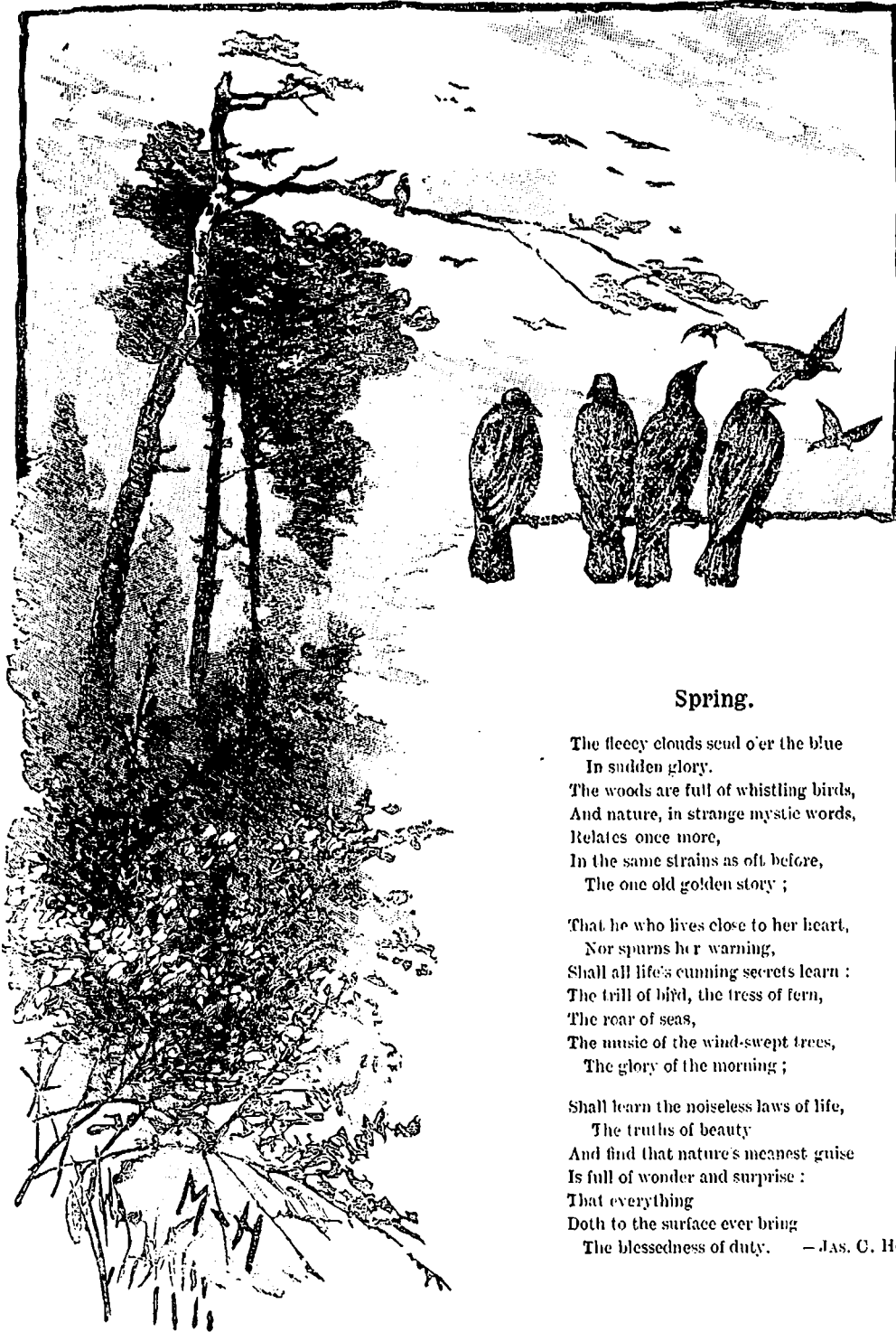
A most important feature in the construction of a grain drill is its frame work, which is subject more than any other part of the machine to severe and sudden strain. The designers have, after experimenting and thoroughly testing the relative merits of many styles of frames, adopted for the Massey-Harris Shoe Drill a frame made from a single and continuous bar of high grade angle steel, which possesses the requisite strength and elasticity necessary to secure a proper foundation upon which to support the seed hopper, attach the draw-bars, shoes, lifting levers, etc. This frame is exactly the same as that used on the Massey-Harris Cultivators and Sectional Seeders. There are no joints in the frame, and there is no tendency whatever to twist. It will successfully resist the most sudden shock. No doubt this solid steel frame is the strongest, lightest and most attractive in appearance yet produced.

Perhaps no greater improvement has been made than in the shoes or runners, and in the present general arrangement and perfect adaptation to the varying conditions of the soil. The machine being absolutely under the control of the operator, any desired depth of sowing may be obtained.

The controlling lever is most conveniently located, and by it a very light pressure or an exceedingly strong one may be applied. This same lever, when thrown in the opposite direction, will lift the runners up from the ground, ready for transportation.

The pressure can, as stated above, be made as light or heavy as desired; does not prevent the shoes or runners from following the unevenness of the ground surface and readily passing over obstructions which may be encountered. Each runner acts independently. By this method there is greater flexibility than in any other machine yet invented.



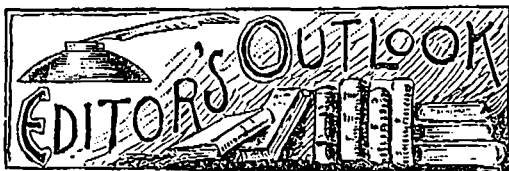


Spring.

The fleecy clouds send o'er the blue
In sudden glory.
The woods are full of whistling birds,
And nature, in strange mystic words,
Relates once more,
In the same strains as oft before,
The one old golden story ;

That he who lives close to her heart,
Nor spurns her warning,
Shall all life's cunning secrets learn :
The trill of bird, the tress of fern,
The roar of seas,
The music of the wind-swept trees,
The glory of the morning ;

Shall learn the noiseless laws of life,
The truths of beauty
And find that nature's meanest guise
Is full of wonder and surprise :
That everything
Doth to the surface ever bring
The blessedness of duty. — JAS. C. HOPKINS



THE sentiment for assimilation of races is so strong in the United States, that a bill has been introduced into the Minnesota Legislature, with a fair prospect of passing, which provides that Chinamen will be prohibited "from wearing their shirts outside of their pants," and requiring them to dress like other citizens. At first the bill was considered as a joke on poor John Chinaman, but it seems there is strong feeling on the subject, and notwithstanding the peculiar wording of the prohibitive clause, the matter is to be seriously considered with the prospect, as has been said, that it will become law without much opposition.

SECRETARY of Agriculture Rusk, who retired on the installation of the Cleveland administration, after four years' service, left behind him a monument of work accomplished, which earns for him high eulogy from the farmers' representatives and the agricultural press of the United States. During his tenure of office, very much attention was given to the in-

terests of agriculture, and the department was placed on a good footing for effective dealing with the numerous problems which confront the practical farmer, whether he deals with live stock, dairy produce, or the crops of the soil. Mr. Rusk has been succeeded in the department of Agriculture by Mr. J. Sterling Morton, of Nebraska.

CONDENSED into short space, the facts contained in the forty-seventh annual report of the Agriculture and Arts Association, were, a revenue for the year, of \$15,289, and an expenditure of \$12,815 ; a registration of 445 Clydesdale, 19 shires, 71 draught horses, and 24 hackneys ; 313 Ayrshires, 25 Herefords, 12 Devons, and 85 Polled Angus ; 112 Dorset horned sheep, 12 Suffolk horned ; 613 Berkshire swine, 515 Yorkshires, 29 Suffolks, 39 Tamworths, 275 Chester whites, and 411 Poland Chinas,—surely a good record. According to the report, there will be entered at the World's Fair, 257 horses (75 being passed conditionally), 259 cattle (175 being passed upon) 523 sheep (350 being approved of), and 152 swine (150 being approved of). The officers for the current year are:—President, Mr. James Rowand, M. P., West Bruce ; vice-president, Mr. Dawson ; secretary-treasurer, Mr. Henry Wade.

THE Ontario Legislature, which will open on the 4th of this month, will be interesting for

several reasons, the chief being that it will meet in the new buildings in the Queen's Park, which has been so many years in course of erection, and for which the province has been called upon to foot an enormous bill. Then, although the session will be so late as to interfere materially with operations on the farm, there will be one or two matters of great interest to farmers up for consideration, among which will be the better education of farmers' sons,—and let us add, daughters. That much has been promised by the Minister of Agriculture, and doubtless the House will be asked to pass upon the proposals which will be presented. The friends of the farmer should stand firmly by each other in exacting the very utmost from the government in this and in every other direction, to which advantage for themselves and the country leads. It is not expected that the session will last long, but while it does the business will be proceeded with at a break-neck pace. The opening ceremonies will be observed with much pagantry and social eclat.

THE convention of the Western Ontario Dairymen's Association was held last month at Brantford, with a large attendance of thoroughly interested members. Factory work was the chief feature of the admirable address of the president. He urged the employment of the most skilled labor, and deprecated the rivalry for patrons which was beginning to show itself in several sections. Speaking of the secret of successful dairying, Mr. S. J. Dillon, of Mount Elgin, held it to be in a large measure cheap food ; he meant cheap food of good quality, his means of obtaining this desirable commodity being the silo. The silo, he considered to be no longer a luxury, but a necessity, on the farm. Every dairyman of consequence knows of Prof. Dean, the enthusiastic professor at the Guelph College. The dairy school there, he stated, accommodated 50 working students. The following part of his interesting address deserves wide circulation:—"Dairying was divided," he said "into two parts, summer and winter. He took up first some of the disadvantages of winter dairying, such as extra work and extra capital, the drawbacks of snow and cold and winter roads. Under the head of advantages of winter dairying he claimed, that it made much less work for the farmers' wives, and that, owing to competition not being so great, prices were much better. Owing to improved methods, too, butter could be made now just about as cheaply in winter as in the summer. There was less waste from winter dairying. Two-thirds of the food consumed by a cow was used to keep her alive, and the milk must come from the other third. It would not pay to only get the third of the food back during six months of the year when she might as well give it out for 11 months." Professor Robertson brought out the interesting fact that there are now 900 cheese factories in Quebec province, and that the number is rapidly increasing. The Association is twenty five years old and has accomplished much good work for its constituency, and for farming in general.

A REVIEW of farm work during the past month shows that farmers have had to contend with more than usual difficulty on account of severe weather, an unusual depth of snow, and keen frost. But there was no long cessation of activity nor of the busy exercises a farmer can always find at his elbow. Stock had to be fed, threshing had to be done, and manure spread on the fields ; fences to be repaired, and things kept comfortable in the stable and at the hearth. Towards the end of the month the fields yielded to the plow and not a moment could be spared from the opening spring work outside the fold. Conventions and spring shows were held, and the closing touches given to the good work prosecuted by the Institutes. In the Commons such questions as immigration and agricultural problems received respectful attention, and altogether the month was one of unusual interest, notwithstanding the natural grumble of a protracted winter and a late spring.

AN interesting discussion took place at that seminary for theories, the Canadian Institute, on Saturday last, which deserves some attention from the north-eastern part of Ontario. A proposition was submitted and ably defended, that the Laurentian region of Ontario included in an area formed to the south and east of a line drawn from Killarney on the Georgian Bay to a point on the Ottawa south of the mouth of the Montreal river, be set apart for fish and game; that no free grant lands be given within the area indicated, anymore; that farms lapsing be promptly taken back by government, and that no more timber be cut down. Colonization roads, portages, and light railways are advocated, and then, with the waters stocked with trout, and the bush with game, thousands of southern tourists will flock to the region with money in their train. Such is the proposition. The barren, inhospitable character of the soil, and the denuded woods are urged in its behalf, and, as a matter of fact, much can be said in favor of the project which will likely be pressed upon the attention of the Local government at the coming session.

"MUSCLE without brains on the farm, is like a ship without a compass." So says a valued contemporary, and so repeats experience. In these days brain is more in demand on the farm than brawn. The agricultural implement maker comes to the farmer's aid with his inventions and "improvements" and relieves him of two-thirds of his muscular toil. Think a moment of the vast advance made in this direction during the short space of the past fifteen years—one fourth of the allotted span of life. Indeed it is not easy to estimate what science has done for the farm. Not only has the husbandman been taught how to multiply the produce of the soil, one-hundred-fold, but how to manipulate labor to save unnecessary toil and money, and how to operate the appliances provided by mechanical skill so as to secure quick despatch, in the most efficient and comfortable manner. If farming is not the drudgery it used to be, the brains of our farmers and of our mechanics are to be thanked; if the reaper has taken the place of the old-fashioned scythe, the mill, of the flail, the credit is due to the inventive genius and busy brain of the patient investigator of well understood general laws. Why, then should brains be less prized than brawn? We contend and no sensible farmer will impugn our contention, that no field of enterprise affords more scope than does the farm for the exercise of keen business activities, and of the heaviest brain power bestowed upon mortal man. Let farmers, then, use their opportunities, begin with small things, study methods, and however small it may be, acquire something new every month, in the matter of knowledge.

DOUBTLESS Ontario is destined to prove one of the greatest agricultural states on this continent. It is admitted that an opinion contrary to this is held by not a few leading farmers who are in a good position to make their views known to the public. They hold that with the opening up of the North West, farming can never again be what it has been in Ontario. It is a first principle with true thought, true research, to respect a different opinion from that which facts seem to point to, provided it is earnest or sincere. We respect the opinion of those who sing a requiem over the departed glory of the Ontario farm, but we are compelled to sing another kind of song to a livelier tune, differing as much from their sonorous melody as does a Strathspey from a dirge. Ontario is all right, and will be all right. Her resources are only limited by the enterprise and intelligence of her people; and surely our public schools, our technical colleges do not neglect

the one, or the ambition and sense of duty peculiar to us, the other. Why, it is as derogatory to the good name of our farmers, as it is shallow reasoning, to hold that because the world moves, and because conditions of life and living alter, we of Ontario cannot keep pace with the times! It is indeed true that we have been experiencing hard times and low prices; these things will come, and they will go. With as great a certainty as the pendulum swings to and fro, so will prices and times fluctuate, the high will come after the low, the low after the high, and the moderate will strike a fair average. When one source of revenue closes another will open, when wheat falls, butter and cheese rise, and the successful farmer is he who, placing his finger on the pulse of the world, measures its varying beats, and registers its facts, so as to deduce the lessons necessary for a sure foreshadowing of future demands. He who can do this gathers wealth on the farm, and it is worth the while of every farmer to study futures. Now, for instance, the opinion of theorists is gaining ground that Ontario will become a great dairying state by the adoption of the silo. Should this prove true, as is very likely to be the case, those who take advantage of the silo first will reap the greater benefit from it, as those who are first in the field in any staying enterprise come out best. It is not necessary here, where we purpose merely to show the groundlessness of the eternal complaint about this province, to enter into the merits of the example given, viz., the silo. It is the subject of considerable exact experiment on well-equipped farms and at the Experimental Stations, but no farmer can deny the fact that the present mode of pasturage causes the destruction of a large quantity of grass which is not eaten by the live stock which feed on the meadows. In every direction new sources of income, new outlets for energy and enterprise, are opening, and instead of remaining in a helpless, paralyzed attitude, the wise and typical farmer will be up and doing, sharpening his faculties to their utmost keenness, so as to perceive and apply what lies within his reach.

"THEM Canucks is getting away with us pretty lively," was the terse remark of a visiting American who viewed with a touch of unaffected admiration, the great Works, in a corner of which your ILLUSTRATED, dear reader, is incubated and hatched. You will find the remark re-iterated on the illustrated cover of the MASSEY-HARRIS new catalogue, where you will find an account, not only of what they do in Toronto and in Canada, but all over the world. The ILLUSTRATED is connected with what is on all hands regarded as Canada's national industry, and it is proud of the connection, for what country in the wide world, from pole to pole, from the Arctic to the Torrid Zone, into which this industry does not penetrate? Absolutely none where grain is raised. It is a tree on which there is no moulderling branch to be lopped off, it is full of sap and shows a foliage dense and heavy as that of Canada's own maple. It is well proportioned. The trunk rises straight from well watered, rich soil, and the branches spread evenly in all directions. One leads in the direction of Europe bearing British, French, German, Austrian, Turkish, Spanish, Italian, Russian, Norwegian, Swedish, Bulgarian and Dutch twigs; another leads to South Africa, with its network of shoots in Cape Colony, Orange Free State, Transvaal and Natal; the Australasian branch, sturdy and vigorous, gives its unbrageous shelter to New South Wales, Victoria, South Australia, Queensland, New Zealand, and Tasmania; a fair, shooting branch is that leading to the South American Republics and the Canadian branches are in every way worthy of the lordly tree. To these and other places the MASSEY-HARRIS name travels on a well-sustained reputation, which helps to raise our country in the eyes of the industrial world.

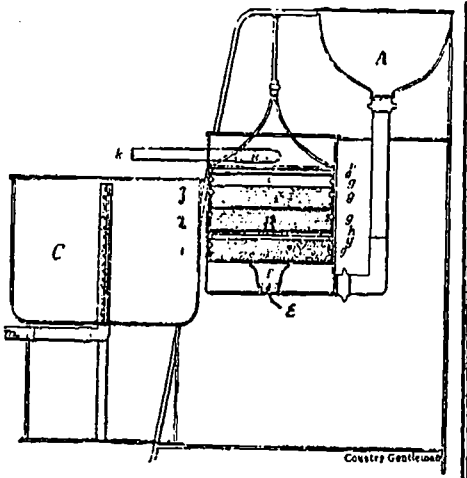


- 1st—The Lindsay, Bobcaygeon and Pontypool Railway bonussed to the extent of \$10,000 by the town of Bobcaygeon.
The twenty-fifth annual banquet of the Royal Colonial Institute, held in London, Eng. . . . Hugh McMillan, M.P. for Vaudreuil, unseated.
- 2nd—The proposal to grant woman suffrage defeated in the Manitoba Legislature. . . . J. R. Proustall, Toronto, assigned.
Funeral of Mrs. Alexander Manning, Toronto, took place.
- 3rd—Mr. Charles Gurney, Hamilton, died. . . . Grand Association of Patrons of Industry convened in Toronto.
Toronto City Council dismissed Dr. Allen, Medical Health Officer.
- 4th—Inauguration of President Cleveland took place. . . . W. J. Macdonell, Chevalier of the Legion of Honour, France, and French Consul for many years in Toronto, died.
Damage to the extent of \$55,000 caused by fire at the Central Prison, Toronto.
- 6th—Mr. Wm Lamont Lathrop, the writer, died. . . . The Sultan of Zanzibar died. . . . The porridge poisoning case at Kemptville, Ont., occurred.
- 7th—Rev. Dr. Scadding re-elected president of the York Pioneers' Association. . . . Montreal Board of Trade adopted resolutions in favor of a fast Atlantic service. . . . Annual convention of the Western Ontario Dairymen's Association opened at Brantford.
- 8th—Mr. Jerome's motion to repeal the School Act was defeated in the Manitoba Legislature. . . . Great Conservative convention held in the Carlton Club, London, Eng., when Irish policy was formulated.
- 9th Patrick A Collins, Massachusetts, nominated to be Consul General at London. . . . The Hawaiian treaty withdrawn from the U.S. Senate. . . . Ex-Minister Baihaut confessed his guilt in the Panama Canal robbery.
- 10th—Expert evidence shows that 105,000,000 francs had been paid to newspapers in the Panama Canal transactions.
Rev. Dr. Andrew Peabody, Harvard College, died in his 92nd year.
- 11th—The Manitoba Legislature was prorogued. . . . Mr. Benjamin Lundy, Niagara Falls, whose family is associated with "Lundy's Lane," died in Florida. . . . Capt. J. R. Taylor, Owen Sound, appointed inspector of lake traffic for the C.P.R.
- 13th—Col. Arthur Rankin, the well-known Ontario politician, died at Windsor. . . . Lady Mowat, wife of Sir Oliver Mowat, died, aged 68 years.
- 14th—W. W. Fitzgerald, Q.C., London, appointed Judge for the County of Welland. . . . J. H. R. Molson, Montreal, donated \$70,000 to the medical faculty of McGill University.
Judge Barrett, Walkerton, appointed senior County Judge of Bruce.
- 15th—D. Campbell, postmaster at Whitewood, Man., disappeared. . . . Supreme Lodge Sons of Eng'and opened in Montreal.
- 16th—A special session of the General Assembly of the Irish Presbyterian Church passed a resolution against Home Rule.
John R. Arnoldi, of the famous "brass dogs" episode, was sentenced to six months' imprisonment in the county gaol.
- 17th—M. Jules Ferry, the celebrated French statesman, died. . . . Henderson Smith, at one time in the employment of George Washington, died in Quinoy, Ill., aged 110 years. . . . St. Patrick's day was generally celebrated in Canada.
- 18th—The great silver Statue of Justice, weighing 1600 lbs., and valued at \$70,000, was successfully cast in Chicago.
- 20th—Fatal accident occurred at Chesterfield coal-pit, Eng. . . . Two hundred and sixty-three Russian political prisoners, men, women and children, perished in the snow on their way to Siberian banishment.
- 21st—Prof. Virchow, the German savant, receives the degree of D. Sc. from Cambridge. . . . De Cobain, ex-M.P., was sentenced to one year's imprisonment with hard labor.
- 22nd—British warship "Undaunted" went aground at Alexandria, Egypt. . . . Robt. Boston, of Lobo, elected to the Commons for South Middlesex, Ont.
- 23rd—The Mayor of Moscow, who was shot by a Nihilist, died. . . . Mr. Edgar's motion, censuring Sir Adolphe Caron, defeated.
- 24th—The Duke of Bedford died suddenly of heart failure. . . . The great Lancashire cotton strike terminated.
- 25th—Shock of earthquake felt in Montana. . . . Lord Hastings, a British Peer, fined for indecent assault on a girl. . . . Damage estimated at two million dollars caused by a cyclone in the Mississippi valley.
- 27th—The Montreal Herald building and plant were completely destroyed by fire. . . . The guilty officials of the Liberator Building Society, London, sentenced to penal servitude.
- 28th—The New York Times changes ownership, having been purchased by a strong syndicate. . . . Messrs. Crossley and Hunter held their farewell meeting in Toronto.
- 29th—W. D. Grand, the well-known horse auctioneer and dealer, of Toronto, was presented with a valuable clock at a banquet held in his honor, on his leaving for New York.
- 30th—Mrs. Alexander Mackenzie (Hon.), died.
- 31st—Good Friday observed as a national holiday. . . . Michael McHugh, Windsor, accidentally drowned.



A Filter for Milk.

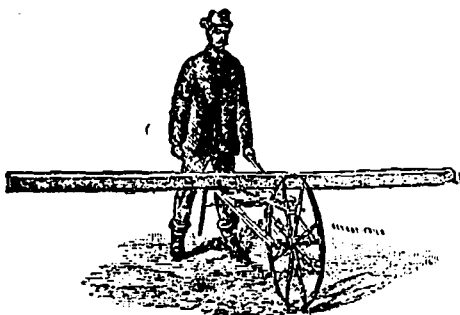
CONSUL Henry Ryder has forwarded a number of interesting papers dealing with the question of milk supply in Copenhagen. All milk sold in the town is filtered through a filter of which the following is an illustration:—



The following is a description of the filter:— Two enamelled-iron tanks, *A* and *B*, on different levels, are connected by a pipe opening into the bottom of each, so that milk poured into the upper tank comes up as a kind of spring at the bottom of the lower. In the bottom tank (*B*) are three layers of gravel (1, 2 and 3)—that in the lowest layer about half the size of a pea, in the middle layer somewhat smaller, and in the third or top layer a little larger than a pin's head. The layers are separated from each other by perforated tin trays resting on galvanized rings, *h h h*, with india-rubber rings, *g g g*, between, to protect the enamel. At *e* is shown an india-rubber ring to preserve enamel against the iron foot-piece or base, *f*. On the top of the uppermost layer of gravel are six layers of fine cloth, *i*. The whole is kept in position by a pyramidal frame work which presses down the tin trays. As the milk rises to the top of the tank it passes off (through pipe, *k k*) into a large storage or mixing receptacle, *C*, and thence into the bottling room, through pipe, *m*, the upright part of which is perforated with a number of holes so as to draw milk from every part of the tank, *C*, and so equalize the quality.

Popular Grass Seeder.

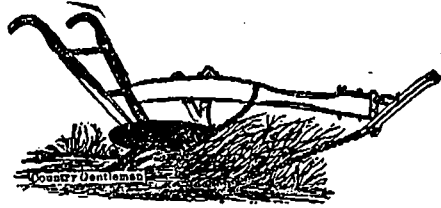
A STRONG plea is put forward in favour of the "Wheelbarrow Grass Seeder," which the cut here given illustrates:—It is claimed that it will sow clover, timothy, red top, flax, etc., in



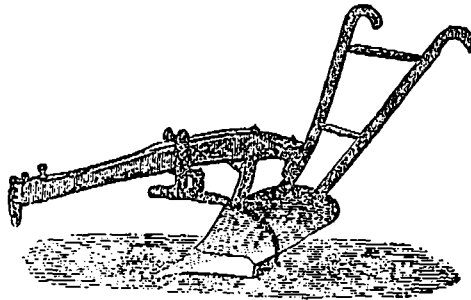
any quantity desired, and that it works very excellently. The two best points made for it are that it is not subject to be clogged by mud, nor its work interfered with by wind.

Weed Hooks and Chains.

A YOUNG farmer writes the *Country Gentleman* that he has been unfortunate in turning under green crops as he cannot cover them completely, and he wishes information on the best



mode of using the chain for this purpose. In reply the following illustrations are given showing a good mode of attaching a heavy or log chain to the evener at the forward end and beam at the rear. Its efficiency depends on the weight of the heavy chain, and a sufficient length to sweep the green crop down flat just forward of the turning sod. The plowman can try different lengths of the chain, and find which works best. There will be a difference between a light and thin crop, soft before ripening, and a dense, stiff and ripened one. The chain must be adjusted to each. The loop in the chain gathers the entire growth of the turning sod together, and the plow buries it. A modification attaches the chain further back to the plow handle, and sweeps the growth all sidewise into the former furrow. This is not quite so perfect, and does not bury the growth so completely. The same end is accomplished



by the weed hook. This may be used for stiff and heavy crops when the chain is too light to be effective. The drawback is its liability to meet obstructions. The successful use of these weed buriers is of great importance in good farming, not only for the manure, but for the smooth and clean crop which is to follow.

DISEASE is often caused by excessive pruning.

A GOOD cure for rats—the barn owl. Give him a roost.

Make a careful selection of only the best garden seeds.

THE garden should be kept perfectly free from weeds.

WHEAT straw can nearly always be worked into good manure.

Now is the time to see that all the fences are in a good state of repair.

BRAIN work and manual labour are both requisite to produce the best results.

"WHICH is the best time to haul out manure?" "When it is ready." is the proper answer.

LET the farmer not forget the hungry soil when he thinks of the appetite of his family.

QUALITY, not quantity, tells in the case of manure, as in the case of other farm articles.

FARM work takes precedence of every other call in spring time. A good spring, a good harvest.

Now is the season when bad roads are felt to be the unmitigated nuisance they are to the farmer.

STOCK your gardens well with small fruits. No farm should be without a well-kept, well-stocked garden.

GENERALLY the nearer home a product can be marketed, the more profitable it will be.—*American Farmer*.

It is easier to make good land on a farm where there is stock, than on a farm given over to wheat raising.

THE area occupied by wood lands in Great Britain increased from 2,458,000 acres in 1881, to 2,695,000 in 1891.

Now that the plowing season is on, it should be borne in mind that the gradual deepening of the soil is the best system to follow.

THE success of the merchant lies greatly in good buying; that of the farmer depends more on good production than on good markets.

STICK to your farm through thick and thin; if you face every difficulty manfully and intelligently, you will overcome and succeed.

THE Hawaiian Islands shipped 117,000 bunches of bananas, 100,000 pounds of wool and 5,000,000 pounds of rice to San Francisco last year.

It is the vigour and not the size of the seed potatoe that determines the size of the product, and the amount of the crop.—*Farmer's Home Weekly*.

SMALL losses, not always observable, cause the great leaks. Look out for little things. Everything in the barn should be husbanded and put to its best use.

NOWHERE can work be reduced to a system better than on a farm. Each month, each season, has its own duties and cares; and there is no monotony in the farmer's vocation.

Now is the time to see that stables are made as comfortable as possible. Drafts give colds, especially to horses, and cause more loss than would be incurred by paying for proper repairs to buildings.

FARMERS intending to go into fruit culture should see that they begin with a good system of operations in view. It is waste of time and money to trifle with any business. Always work on a plan with a definite object in view.

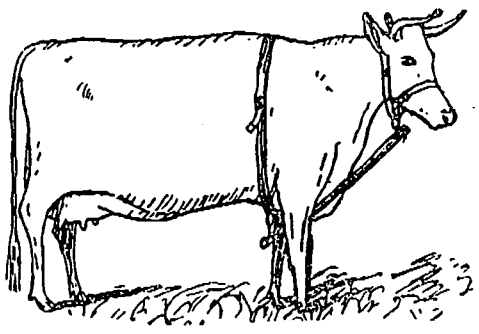
ONE must be schooled in farming to make the most of it. A farmer should never let a day pass without thinking out some problem for the improvement of his methods of working, or of his resources.

NEVER was truer advice given than that which the old farmer gave his discontented son:—If you mean to get as good a price as your neighbor, you must produce an article of equal quality. The quality regulates the price of farm products as it does of implements.

Tide Stock.

Anti Self-Sucker.

A CORRESPONDENT of the *Pacific Rural Press* gives the device here shown, as a successful one for stopping a cow from sucking herself. It is readily understood from the picture—a



wrap around the body and a halter, with a stick reaching through the front legs between them. This will surely prevent the cow from putting her head around unless she steps over the stick.

Do not let the teams run down now.

Few breeders can afford to sell their best sheep.

A GOOD heavy draught horse will give good turns.

BEWARE of overstocking at the beginning of winter.

SHEEP make annual payments on the capital invested.

AN animal usually consumes in proportions to his size.

Low feeding, or feed of inferior quality will depreciate the best bred stock.

It is of more importance to have the sow of good proportions, than the boar.

GREAT care ought to be taken to protect "accidental" lambs from the cold winds of spring.

It is sometimes the better way, to feed up and make beef of a cow so vicious that it becomes almost impossible to break her.

THE size of a cow is no indication of her value as a milker or butter-maker; nor is the small milker always a bad butter maker.

It is stated that the United States have 71 sheep for every 100 of population, while Australia has over 3000 for every 100 people.

AN extensive outbreak of cattle disease has been reported from various districts in Sweden and Jutland, also on 13 estates between Welfar and Lubeck in Germany.

THE better the pasture for the growing pigs, the less feed required to keep them thrifty; and success in profitable pig raising depends upon liberal feeding until they are three or four months old.

COLOR is said to be an important factor in the value of a horse. Gray is longest lived, next comes the roan; and creams are said to possess the staying power, and are devoid of other good qualities.

"How often should cattle be fed?" A more important question is "Do you feed your cattle sufficiently?" It is better to give enough to your cattle than to give it in small quantities frequently.

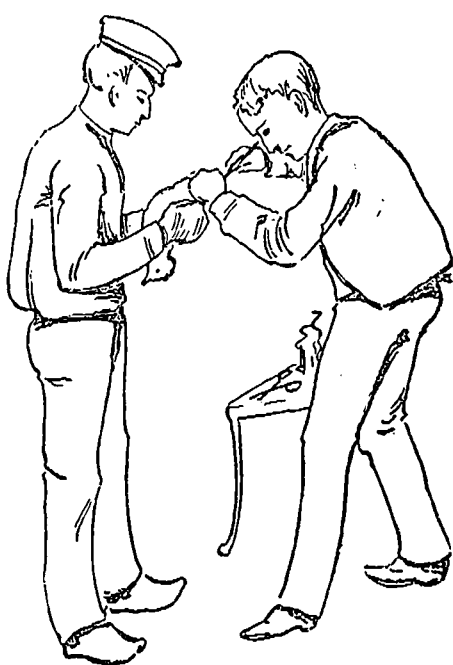
INSTANCES continue to be reported in the contemporary press of the bravery with which Dorsets defend themselves from dogs and of their fearless attacks on the canine, all of which are given to prove that the Dorset is "dog proof."

THERE is a decided advantage in keeping growing pigs in good, thrifty condition, so that at any time, if it should be considered best, with a short time of liberal feeding in grain fattening foods, they can be made ready for market.—*The Maryland Farmer*.

The Poultry Yard.

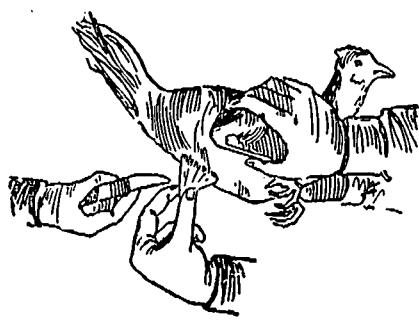
Caponizing.

THE *Rural New Yorker* gives the following cuts on the interesting subject of caponizing, a matter which is receiving considerable and increasing attention from our Canadian farmers who take an intelligent interest in the subject of poultry. No special tools are required: a budding knife, nail scissors, a light darning needle, No. 4 or 5, and thread, a saucer with some hard-wood ashes and a small oil can with sweet oil are placed handy to the operator's



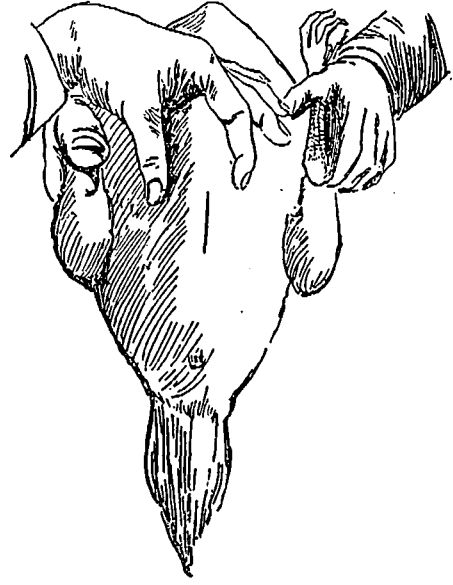
FRENCH CAPONIZING WITH FINGERS.

right. The bird is held firmly by an assistant. The operator commences by clearing a space of all the down on the middle of the belly with the scissors, and catches hold of the skin with the left hand forefinger and thumb, and pulls upward so that the incision in the skin may be made without injuring the intestines. As soon as the point of the knife has penetrated the second skin, the scissors are inserted and the



cut extended upwards three-quarters of an inch, more or less, according to the thickness of the

operator's forefinger. On withdrawing the scissors, the left hand is placed over the cut so as to keep the upper and lower incisions from shifting. Now insert the forefinger of the right hand, keeping along inside the walls until the spine is reached; then feel up and down the latter until you reach the two testicles, which are fixed to the spine; get one of them under the point of the finger and nail, and press it off its moorings, returning with it along the wall of the belly until the incision is reached; then throw it out and go back for the second testicle. Then drop three or four drops of sweet oil into the wound, take the needle and thread with a knot fixed, and sew up the wound with three or four stitches, as you would the mouth of a sack, without drawing too tightly, drop some oil on this seam and a pinch of ashes,



which concludes the operation. It is, besides, customary to cut off the knob that would form the spur on the leg with the knife and the comb and lappels with the scissors, and sprinkle with ashes to stop the bleeding. The birds, when of proper age, will be all right the day following; yet it is prudent to keep them indoors for a day or two.

This method is surely a cruel one, and cannot compare with those more commonly in use.

BIRDS should all be properly mated for the season's breeding by the first of March.

THE proper time to sell pigeons for the table is just before they leave the nest, when they are about a month old.

DON'T expect all the birds hatched from "fine" eggs to be prize-winners; "off" birds will come from the best yards.

NEW corn is not a good feed for fowls. A little mixed with other grain will not hurt much, but don't feed it in quantity.

ALL breeders of Asiatics should get their breeding pens together this month, in order to have chicks fit to win at the fall shows.

CORN meal and bran mixed in milk makes a very good feed for chickens; take about one-third or one-fourth bran and the rest corn meal.

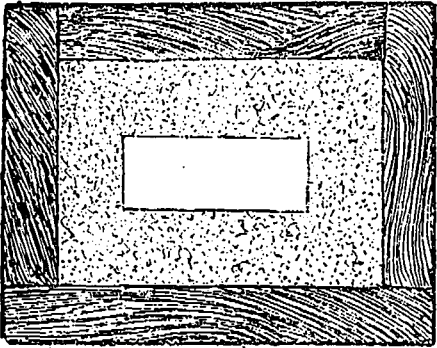
IN city yards where rats and cats do much destruction at nights to chickens, protection can be given to the chickens by having movable bottoms to the coops and raising them some distance from the ground.

MATE for easiness of keep. There are always some fowls that can be kept in good condition upon less grain than is required to keep others in a like condition. The digestion, or disposition, or both, are more perfect.

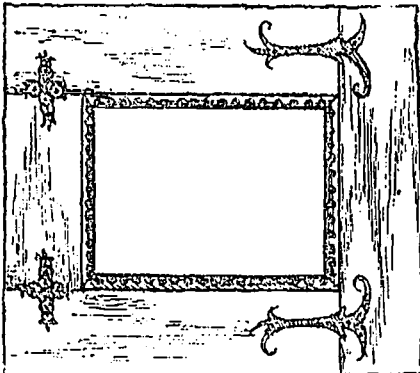


Working in Wood.

Picture frames offer an excellent chance for the home-worker's taste and skill. For several years, the fashion of making frames with flat moldings and square corner joints has been employed. Of late, the beauty and artistic effect of these has been greatly increased by the use of the fancy bronze or black iron joint-straps, which are shown in the illustrations. An al-

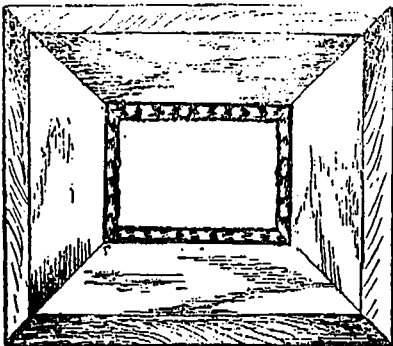


most endless variety of styles can be made in this way, a large variety of woods being available for this purpose, though nothing is more effective than oak or a fine-grained piece of ash. To secure a dark, rich effect with these woods the grain can be rubbed full of a mixture of oil and lampblack or oil and brown ochre. Another finish is to fill the grain of the darkened wood with bronze powder—the oak stair-rails in one



of the handsomest art galleries in New York City being treated in this way. Before employing any of these finishes, it would be well to experiment with them on small pieces of the wood. Cherry, either in its natural state or stained, can be used to advantage. Strips of inch-thick pine boards, with edges carefully finished, but with the flat surface left rough from the saw, the whole covered with the liquid bronzing that comes in small bottles, will be found very artistic and effective.

Those who have a taste for wood carving, and have the proper tools for such work, can make very effective ornaments for these frames. If inside moldings of gold or bronze are desired let them be of the real article, or let them be

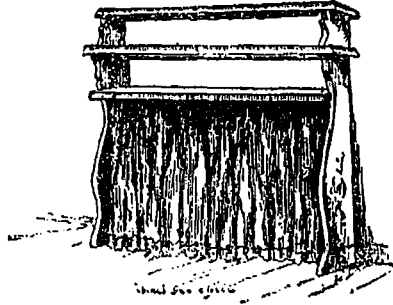


With Two Beveled Surfaces.

left out entirely. There is nothing in the way of house furnishing or ornamentation that looks quite so shabby and devoid of taste as cheap

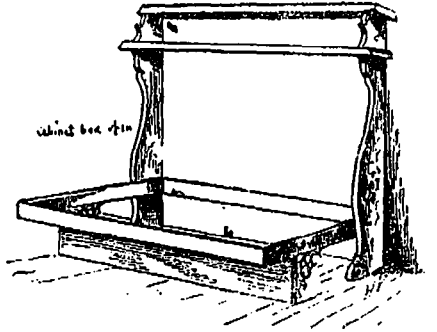
"gilt" or cheap so-called bronze moldings. Let us have things what they appear to be. Corners are apt to be a source of great trouble in attempting to make a room attractive.

A practical object for the application of the amateur wood-worker's skill is to be seen in the illustrations that show how a cabinet-bed frame can be constructed so as to avoid the usual ugly



appearance which these articles have. The frame when made should be securely fastened to the wall to render the shelves for books or bric-a-brac perfectly firm. The lowest shelf in the folded-bed frame serves, when the frame is open, as a support for the front-side of the bed-frame proper, across which slats can be placed

or a bed-cord stretched. The curtain runs up a brass rod beneath the shelf. The illustration



that accompany this article are offered not patterns to be followed without change, but they serve as suggestions in the delightful exercise of working in our finer woods they will have accomplished some purpose at least.

A sure cure for inflammatory rheumatism made by taking one ounce of pulverized saltpeter and putting it into a pint of sweet water. Bathe the parts affected and a sound cure will speedily be made.



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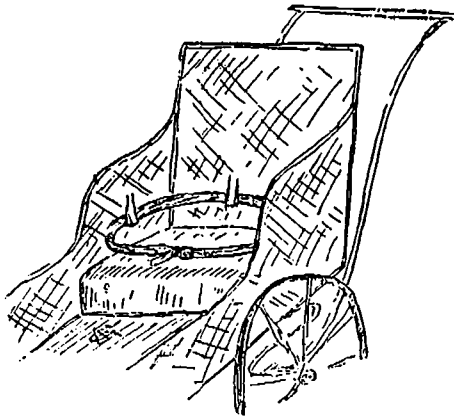


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Strap the Babies In.

As mothers know, it is not an easy matter to keep a healthy, energetic baby in its carriage. The restless little hands will reach out for passing objects; the sturdy little feet doing their best by pushing to help baby get possession of whatever may have taken his fancy, and so before the nurse or mother can grasp it, and in spite of the strap carefully buckled in front, baby takes a header out of his coach and gets—not what he wanted—but bruises more or less serious.

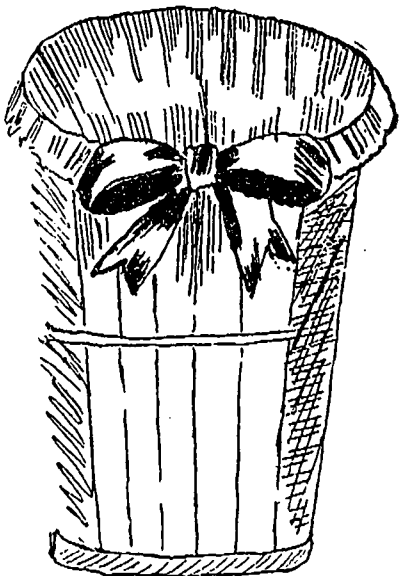
A simple little contrivance which the big boy of the family has fastened to the seat of his brother's carriage has proved helpful. It



consists simply of three loops and a belt to be passed through them, and fastened around baby's waist. All may be of leather or of strong linen duck; mine were fashioned from a couple of old alligator-skin belts. They are arranged as shown in the illustration.

Scrap Basket for Presents.

No room is complete without a waste basket, more or less capacious according to the business of the occupant. The woman who sews, the woman who writes or the mother with several small children to make "scraps," all need baskets, if the room is to be kept tidy. Our sketch



shows one made from an ordinary half-bushel peach basket. If it is for the parlor, enamel it white, with gilt bands; line it with silkoline with yellow ground and great tiger lilies in old pink. Make the lining half as wide again as the top of the basket and about six inches deeper. The extra depth is to be turned over at the top for a double frill; make a tuck on the long side wide enough to hold a narrow,

strong, tape; draw this up to form the frill; carefully distribute the fulness, and sew to the top of the basket under the frill; fasten with a bow of yellow ribbon. It would be pretty painted brown with a yellow silesia and a bow of wide golden-brown ribbon. It is a good plan to put a heavy round block of wood, a couple of inches thick, in the bottom of the basket under the lining to keep it from falling or being easily knocked over.

A Japanese Scrap Jar.

THE Japanese scrap jar, or vase, seen in Fig. 1 of the accompanying illustrations, is made of cretonne, and intended to be used for scraps. It will be found of very convenient height to stand beside the sewing-machine. To make this jar



FIG. 1.

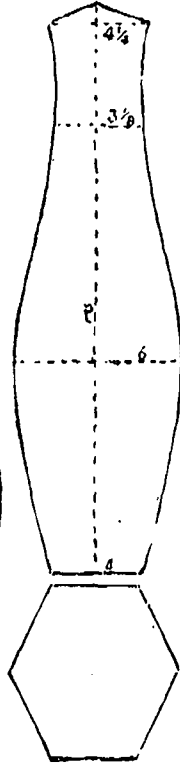


FIG. 2.

requires one and a quarter yards of cretonne, one yard of silesia, and the same quantity of heavy pasteboard. First cut a pattern according to diagram shown in Fig. 2; after which cut from the pasteboard six of the long panels, and one piece for the bottom. In selecting the cretonne for the vase, choose a pattern that resembles the designs on china vases, and has a Japanese effect. The pattern illustrated herewith, is in shades of blue on a white ground, and the vase is lined with plain blue silesia. Cover each piece of pasteboard with cretonne on one side, and silesia on the other, and overcast the edges together. Join the six parts by over-handing them together on the outside, and then over-hand the bottom piece in.

Hints to Housekeepers.

If paper has been laid under the carpet, all dust may be easily removed with it.

Copperas mixed with the whitewash put upon the cellar walls will keep vermin away.

Ceilings that have been smoked by a paraffin lamp should be washed off with soda water.

Hellebore sprinkled on the floor at night destroys cockroaches. They eat it, and are poisoned.

The warmth of floors is greatly increased by having carpet linen or layers of paper under the carpet.

Drain pipes and all places that are sour or impure may be cleansed with lime water or carbolic acid.

The juice of half a lemon in a teacup of strong black, coffee, without sugar, will often cure a sick headache.

Moth-infested articles should be saturated in naphtha or benzine. It injures nothing, and kills the destroyer.

Strong brine may be used to advantage in washing bedsteads. Hot alum water is also good for this purpose.

Thick sweet cream sweetened and flavored, and thickened with a little flour or corn starch and baked between two crusts, is excellent.

For simple hoarseness take a fresh egg, beat it and thicken with pulverised sugar. Eat freely of it and the hoarseness will soon be relieved.

The skin of a boiled egg is the best remedy for a boil. Carefully peel it, wet, apply to the boil; it draws out the matter and relieves soreness.

Mildew may be removed by rubbing common yellow soap on it, then salt and starch over that; rub all in well and lay in the bright sunshine.

Toothache can generally be cured immediately by putting a small piece of cotton, saturated with strong ammonia, into the hollow of the affected tooth.

A piece of chamois skin bound on the edges, shaped to fit the heel and kept in place by a piece of elastic rubber, worn over the stockings, will save much mending.

When the face and ears burn so terribly bathe them in very hot water—as hot as you can bear. This will be more apt to cool them than any cold application.

Castor oil may be comfortably taken in hot milk, in a half wineglassful of weak punch, in hot water sweetened and highly flavored with essence of peppermint or wintergreen.

A good remedy for damp, moist hands is four ounces of cologne water and one half-ounce of tincture of belladonna. Rub the hands with this several times a day.

Ribbons and other silks should be put away for preservation in brown paper, as the chloride of lime used in manufacturing white paper frequently produces discoloration.

Iron rust may be removed from marble by taking one part of nitric acid to twenty-five parts of water and applying it carefully to the spots. Rinse off with ammonia and water.

Meat can be kept very nicely for a week or two by covering it with sour milk or buttermilk and placing it in a cool cellar. The bone or fat need not be removed. Rinse well before using.

HOW TO WASH COLORED CALICOES.—After washing and rinsing the garments dip them in a pail of rain water in which five cents' worth of sugar of lead has been dissolved. Wring out promptly.

A goblet of hot water taken just after rising, before breakfast, has cured thousands of cases of indigestion, and no simple remedy is more widely recommended by physicians to dyspeptics.

The water tank or cooler in which the drinking water is kept should be lined with porcelain, and it should be emptied and thoroughly cleansed every morning before the fresh water and ice are put in.

Steaming the face at night over a bowl of very hot water, and then bathing it with very cold water, is a simple method of giving it a Russian bath, and will tend to make the skin whiter and smoother and the flesh firmer.

A young housekeeper asks for something that will remove indelible ink stains. Cyanide of potassium, which is a deadly poison, and must be carefully handled, will remove some stains of so-called "indelible" ink. Get directions for its use from the apothecary where you purchase the preparation.

All fruit that requires paring should be put immediately in very cold water and allowed to remain until sufficient quantity has been prepared; this prevents the fruit from becoming discolored. Where the fruit is tender and it is desired to keep its shape and color, it may be dipped quickly into strong lemon juice, and when the syrup is made in which it is to be cooked, a little lemon juice may be added. Some cooks use alum water for hardening fruit for preserving, but we do not advise it.



INVESTIGATING THE FIRE.

FIRE MARSHAL—You say it started in the waste-basket. Now, you had four of these grenades in a rack at your elbow, how was it that you did not use them?
MR. CASSIDY—Och! Them things, is it? Sure, I thot of thim to wanst; but while I was gittin' a corkscrew to open wan, the fire got the start of me intirely!

A SNAG STORY.

Commodore Davidson's greatest enjoyment was story telling. One of his pet stories was about a pilot who had been discharged from an opposition line because he had run his boat upon a snag and sunk her. When the fellow came to the Commodore for employment he seemed rather proud that he had struck the snag.

"I don't want pilots who run upon snags," said the Commodore.

"Of course you don't. I wouldn't if I were in your place," said the applicant. "That's why I think you ought to hire me."

"But do you strike snags?"
 "I used to, Commodore, but I don't now. I've been running on snags in this river off and on now for fifteen years, and I've hit every one of 'em, every blamed one of 'em, Commodore. But I never hit the same one twice, so I'm the safest man you can get now."

The Commodore used also to tell a companion to this one. It was about another man who came to him to get a place as pilot.

"Do you know the river the Commodore asked?"
 "Yes, sir."
 "Know where the snags are, do you?"
 "No, sir; I don't."
 "Then how in the world do you expect to handle a boat safely?"
 "Well, Commodore, I know where the snags aint, and that's where I always run my boat."

FOUR FATHERS.

Josie's mind became exercised upon the subject of her forefathers.

"Four fathers," she soliloquized; "I am sure I can't think who they are. There's father and my two grandfathers, that's plain enough. But who can the other be?"

Here she twitched her mother's dress inquiringly, but no immediate answer being given, she solved the problem for herself with a triumphant shout:

"Oh, I know! It is 'Our Father who art in heaven.' I have got four fathers!"
 And she walked off, disdainful further information on the subject.

REMEMBERED ALMOST EVERYTHING.

"John," she said, as they were leaving the Union station, "have you got my valise?"

"Yes."
 "Got the shawl?"
 "Yes."
 "Got my new umbrella and the lunch box?"
 "Yes."
 "And Uncle Henry's field glasses and the cushion to sit on while we see the parade?"
 "Yes."

She thought for a while and then exclaimed:
 "Oh, John! where's the baby?"
 "Well," said John, slowly, "I must own up, Maria, I did forget the baby."

And he went back to recover the one thing that had escaped his attention.

A Georgia exchange, in giving a definition of a philosopher, says that a philosopher is a man who earns \$9 a week and is contented with the world.

The surest way out of serious trouble is to keep out.

"You have been losing flesh lately, haven't you?" "Yes; I've been shaving myself."

He—"What makes you think this is the milk train?" She—"Because it has stopped so often for water."

The man who has the smoothest sailing in life does not always have the pleasantest landing place when the voyage is ended.

"Did Mr Cumso seem annoyed at your calling with his bill?" asked Mr. Gaskett of his new collector. "No, sir," replied the young man. "On the contrary, he asked me to call again."

She was winding yarn for her grandmother and broke out with: "I wish I was one of those ocean greyhounds we read about."
 "Why, dear?" "Because I've made forty knots in the last half hour."

A Strachan avenue father went home the other evening and at once asked what caused such an unpleasant odor in the house. Little Manie, who was looking through a picture book promptly exclaimed: "It's a dead rat in this here pisher, I smelled it soon's I turned the leaf."

Little Grandson—"Grandpa, you said last summer when you were here that if I took a cold water bath every morning you would give me something nice."
 "Yes, Henry, but you didn't do it."
 "I am taking them now, grandpa; I eluded you knew best."
 "Glad to hear it, my boy. It will be the making of your health. Take this \$5 and get what you want with it. How long have you kept it up, Henry?" "I commenced this morning."

New father—"What's the baby crying for?" Mother—"Because I told him he looked like you."

He—"Has the young man a good reputation?" She—"Excellent. He has the reputation of being a millionaire."

Doctor—"Mr. De Slimdood is suffering from brain fatigue or mental confusion." Mrs. Heartless—"Ah, he has been trying so hard to think?"

Bicker—"Why do you run out to your farm so often; what is there on the place to absorb your interest?" Dicker—"A thundering big mortgage."

Mrs. Ryer—"Those are nice looking eggs Grocer (enthusiastically)—"Yes, indeed; they're birds!" And then he wondered why she didn't buy any.

McCarthy—Old Brown declares that you are the most entertaining talker in the club. What do you usually talk about in his company?" McCormick—"Old Brown."

"Professor," said a graduate, trying to be pathetic at parting, "I am indebted to you for all I know." "Pray do not mention such a trifle," was the not very flattering reply.

Judge—"Ah, you have seen me more than once already, haven't you?" Prisoner—"I have had that your honor. And, as we know each other so well, permit me to ask how your charming wife is."

"Did you write James Skidmore's name on this note?" said the judge to the prisoner accused of forgery. "I'd like to know, judge," said the culprit, "if Jim Skidmore has a copy-right on the letters as happens to form his name."

VIOLATING AN ORDINANCE.

The young fellow about the merchant's store had grown from bad to worse, and at last his employer had an open row with him.

"What are you going to do about it?" asked the youth solemnly.

"I'll fire you," said the irate merchant.
 "You do and I'll have you arrested."
 The merchant gasped.

"Have me arrested?" he exclaimed, "What for?"
 "For firing in the city limits without a permit," and the merchant risked it then and there.

A DECIDED DIFFERENCE.

"What means this colness between Jonson and Joanes—is there a difference between them?"

"Difference? I should say so! As much difference as there is between a gentleman and a donkey."

"Hm! But which is the gentleman and which is the donkey?"

"Well, it is just where they differ."

SMART YOUNG KING.

Court journals always contain smart sayings attributed to royal babies. King Alfonso XII, of Spain, is only 6½ years old, but when he was confined to his room in Seville from illness the Prime Minister, Senor Canovas, came in and called him by his pet name.

"Ah!" said he, "how is Alfonsito to day?"

The little king looked up severely.
 "To mamma I am Alphonsito," said he; "to you I king."

She was a little old fashioned girl, raised among people much older than herself. One of the cold nights of this old fashioned winter she was sent to bed and a jug of hot water placed as a protection against cold feet. She made an earnest protest against this, and the mother had to threaten punishment before the little hopeful yielded to the point. No doubt she did some literal kicking after getting into bed, for shortly after doing so she hopped to the top of the stairway with her foot parabolled from the contents of the jug, and with her streaming down her cheeks called lustily: "Mamma, it really very inconvenient for me to have that jug in my bed. It was removed and the nurse sat up with the foot."

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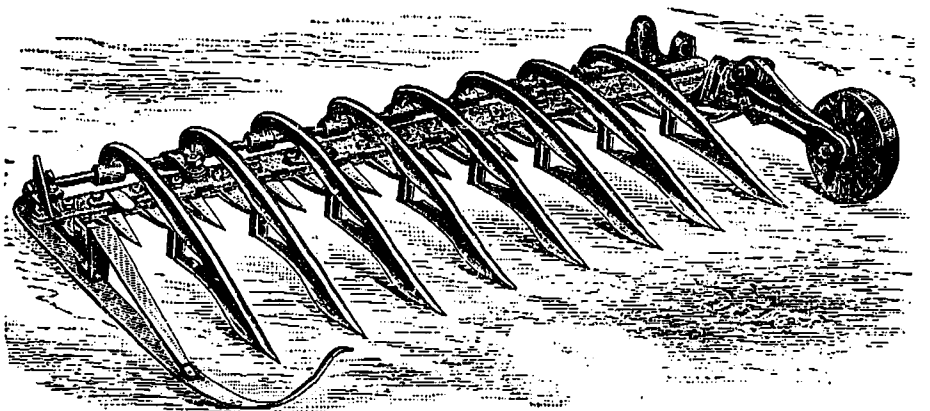
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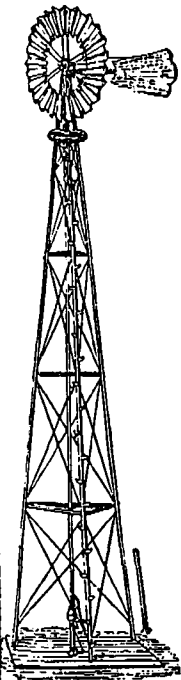
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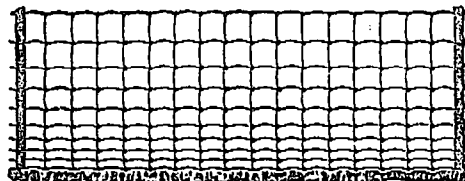
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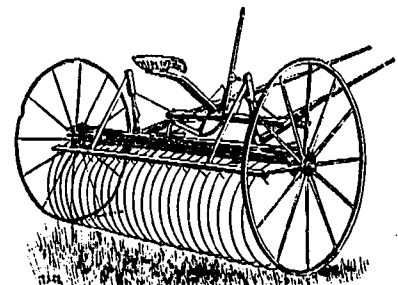
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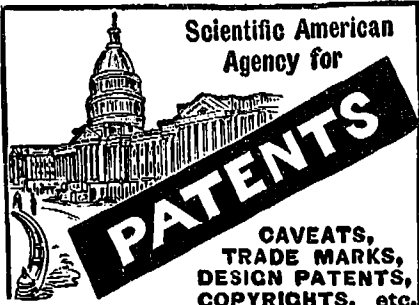
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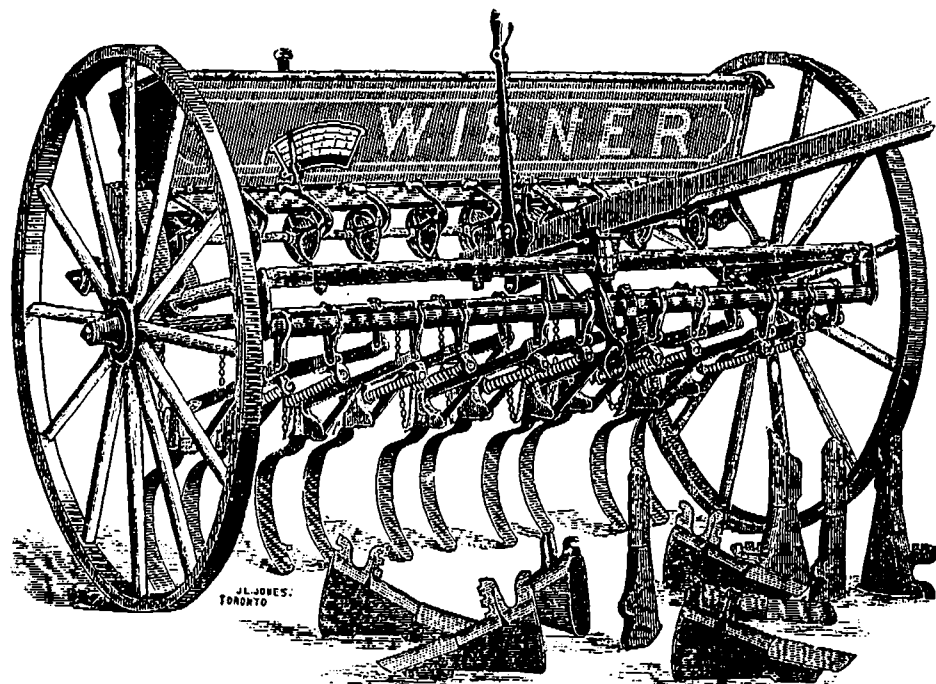
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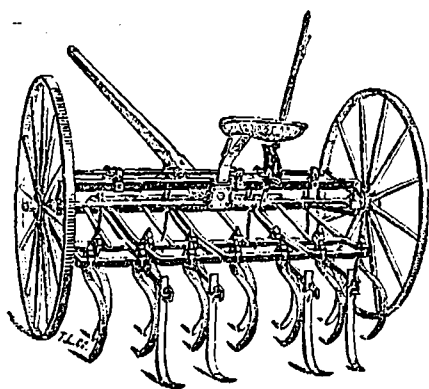
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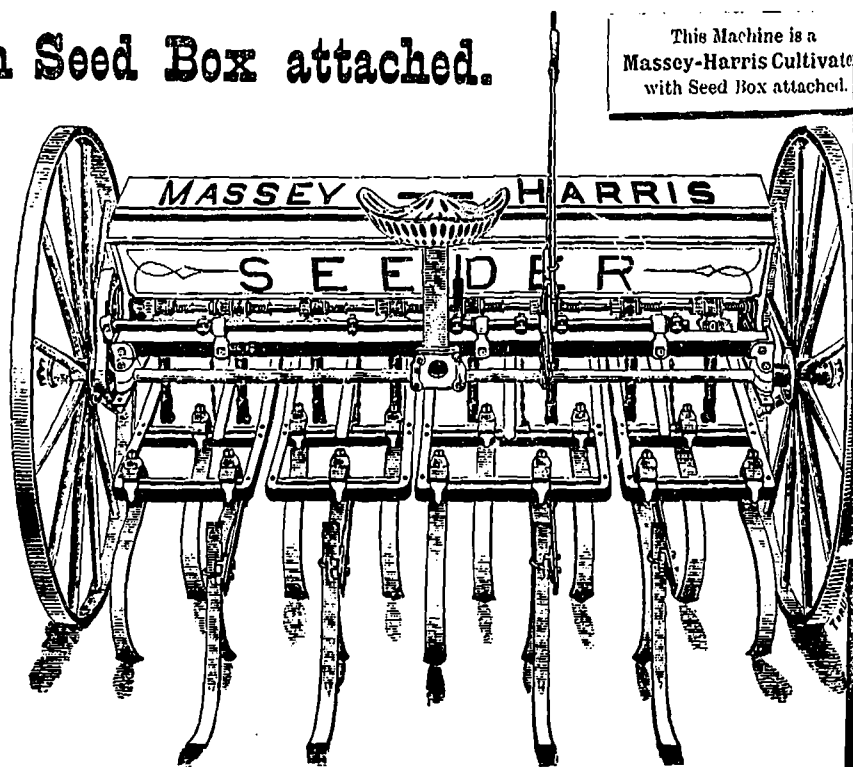
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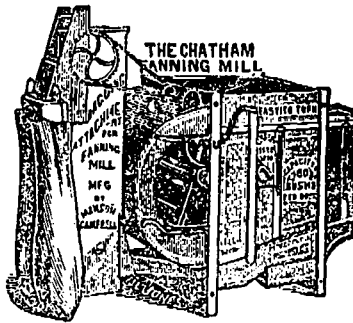
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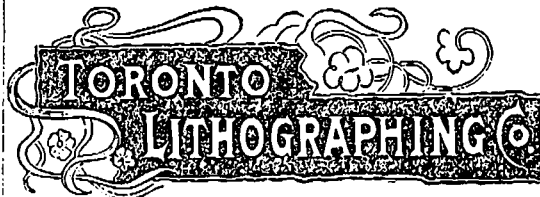
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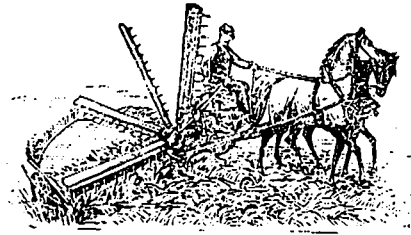
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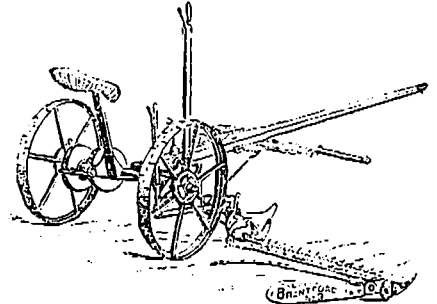
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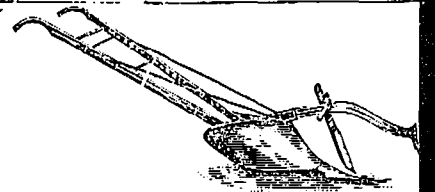
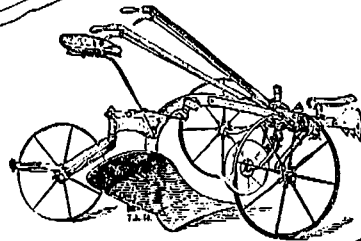
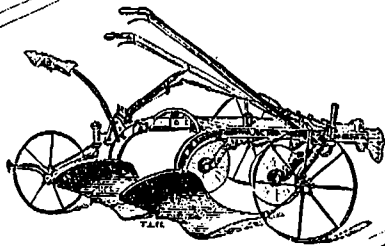
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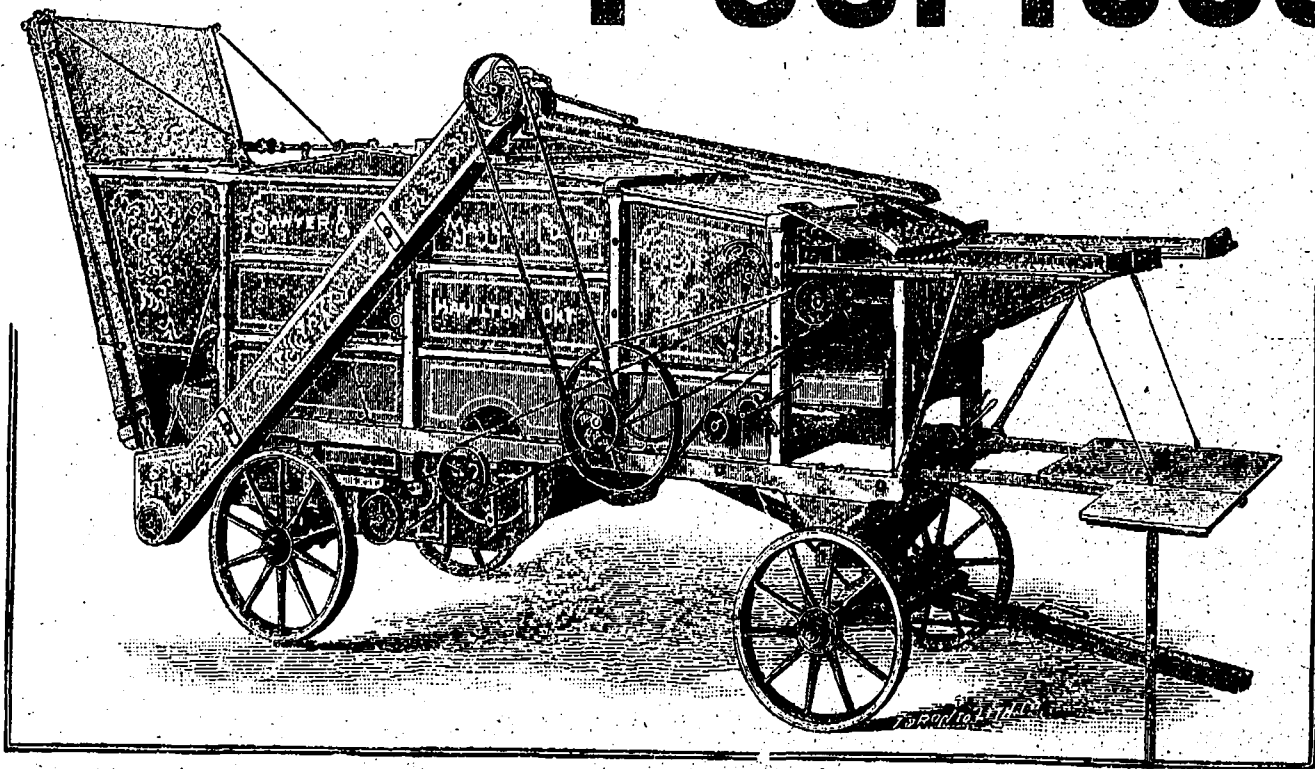
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