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# DOMINION MECHANICAL & MILLING NEWS

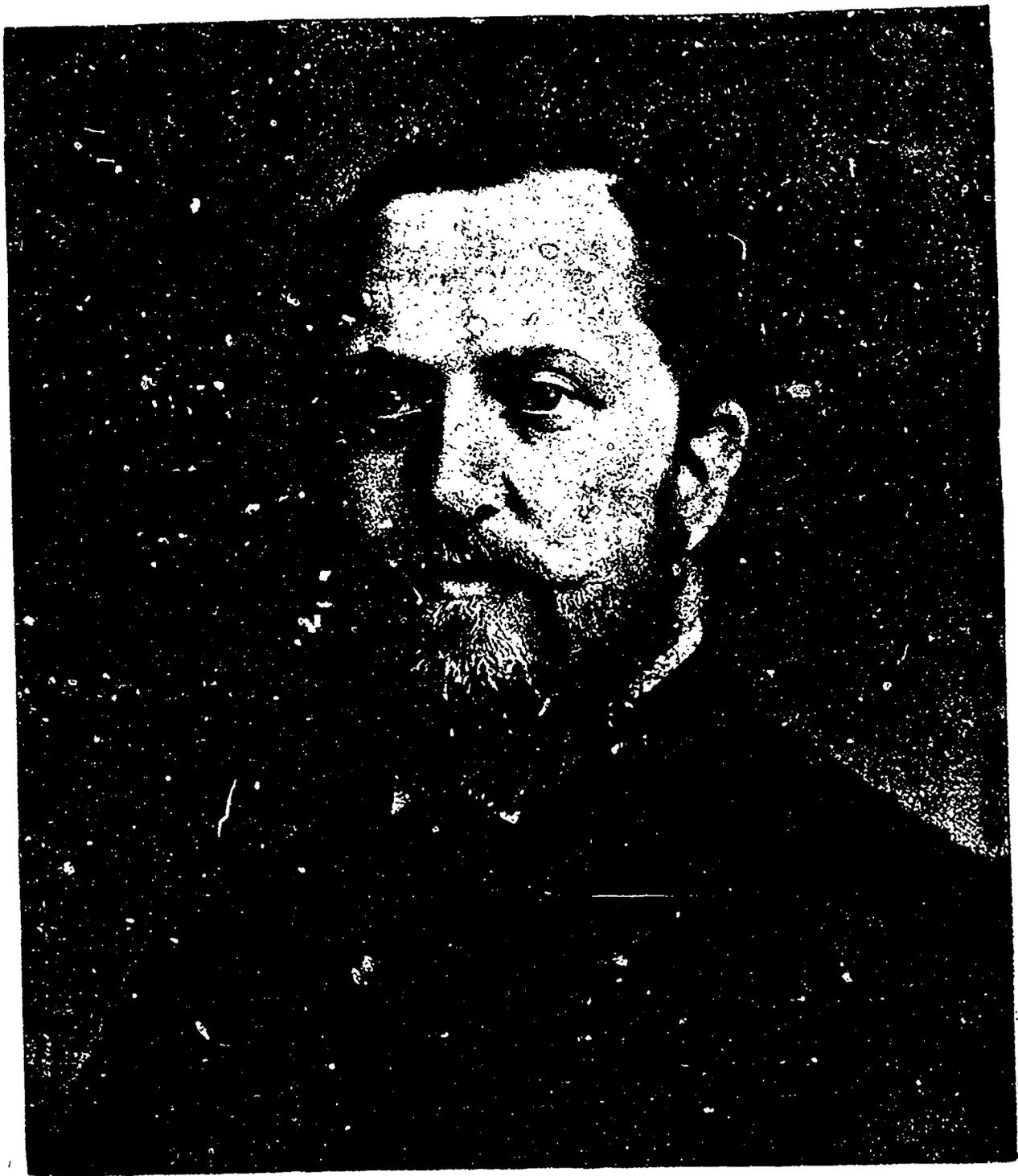
DEVOTED ESPECIALLY TO THE INTERESTS OF OWNERS AND OPERATORS OF

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TORONTO, ONTARIO, SEPTEMBER, 1888.

Price, 10 Cents  
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Vol. XI.—No. III.



HIS EXCELLENCY THE RIGHT HONORABLE SIR FREDERICK ARTHUR STANLEY,  
BARON STANLEY, OF PRESTON, G. C. B.,  
GOVERNOR GENERAL OF CANADA.

## THE GOVERNOR-GENERAL.

A FITTING frontispiece to this number is the portrait which we present of our newly arrived Governor-General, Lord Stanley, who will visit Toronto a few days hence for the purpose of formally opening the Industrial Exhibition. This will be His Excellency's first visit to the Queen City of the West, and the occasion will be one calculated to give him a favorable impression of our industrial as well as our agricultural capabilities. Canada has been singularly fortunate of late years in having as representatives of Her Majesty, men who took a deep interest in the welfare of the Dominion and who assisted not a little in its promotion. We have every confidence that Lord Stanley will prove the equal of his worthy predecessors. We bespeak for him an enthusiastic welcome and a pleasant and profitable visit to the premier province of the Dominion.

[For the MECHANICAL AND MILLING NEWS.

## STEAM POWER AS IT IS AND WAS.

BY GEO. C. ROHL.

THE power of steam was slightly known many hundreds of years ago, and several steam contrivances are described by Hero, of Alexandria who flourished more than 100 years before Christ.

For 1700 years no progress seems to have been made in the way of bringing steam power into practical use. The earliest steam appliances which proved of any real value were used for discharging water from mines. These were gradually improved, until the pumping engine was produced. In 1769 James Watt patented improvements embodying principles which are still recognized as essential in successful steam engines. Since Watt's time many have been the improvements made, and the questions now raised by some are: Has the steam engine reached its final stage of development? Can it be still further improved, or will it soon have to give place to some simpler and better contrivance for the production and utilization of power?

It will help to find the answers to these questions to look at what has been done already.

The first railway for public travel and using steam locomotives was opened in England in 1825, not yet 60 years ago.

The first successful locomotive was the famous "Rocket." It weighed four and a half tons. The pressure of steam used was 30 lbs. per square inch, and it could draw a load of 40 tons at a speed of a little over 13 miles per hour.

The first American railway was opened in 1832. The locomotive was imported from England, and was a small affair similar in design to the Rocket. It is interesting to note that nearly 30 duty had to be paid to the custom house on it.

At the present day locomotives are in daily use which weigh about 50 tons, and some as high as 70 tons, and the speed attained by the fastest trains is three to four times as great as it was 50 years ago.

The work done by locomotives on the Great Northern railway, of England, in hauling freight will give an idea of the great advance made since the days of the Rocket. These engines haul a gross load of 740 tons in an ascending incline of 1 in 178, with a consumption of 50 lbs. of coal per mile run.

An express passenger train on the London and North-western hauls 293 tons at a speed of 45 miles per hour on a level road with a consumption of 26½ lbs. of coal per mile run. On the Great Northern railway trains are run 105¼ miles without a stop. This distance is gone over in one hour and 58 minutes.

In marine engines greater advance has been made than in any other department of steam engineering. There are obvious reasons for this, as successful voyages can only be made by machinery not likely to break down, and the less fuel used the more paying freight can be carried, and the better the ship will pay.

Attempts at steam-navigation were made as early as 1781, but the first successful steam vessel is said to have been the "Charlotte Dundas" which was used in 1802 as a tug on the Forth and Clyde canal in Scotland. This tug had an engine built by Symington, and was a wheel. In 1807 Fulton had a steamer running on the Hudson, and in 1812 Bell built the "Comet," which was the first Clyde steamer, and was driven by two pairs of paddle wheels. The competition for the traffic across the Atlantic has probably done more for the advancement of marine engineering than any other service. The first regular service was established in 1838 between Bristol and New York by the steamer "Great Western."

About 1840 the Cunard line of steamers was established, and to this day this Company's vessels continue to

occupy a first place for speed, safety and comfort in making the Atlantic voyage.

In 1857 the American Columbia line was established and boats about 260 feet long, and crossing the Atlantic in eleven days were described by an American divine as "magnificent floating palaces, marvels of American skill and engineering, and as lifting the United States into the very front rank among the nations of the earth."

In our own day the great steamers in the Atlantic trade are too numerous to mention, but some particulars of a few of them will show how much the improvement of the steam engine has had to do with the success of the trade.

Dr. Lardner, who some fifty years ago was a great scientific authority, declared and attempted to prove, that steam navigation could never be successfully employed in crossing the Atlantic, as the vessels could not carry coal enough to keep the machinery in motion for the length of time required.

At present some of the slow steamers take in coal enough for a double voyage and carry three to four thousand tons of freight beside passengers.

Of well known Atlantic steamers the "Alaska" has engines of 10,500 h. p. The "Umbria" and "Etruria" have engines of 14,300 h. p., and the latest addition, the "City of New York," has engines of 20,000 h. p. The great speed at which these vessels run is only obtained by enormous power in the engines, and had there not been great improvements in the economical working of the engines the consumption of coal would have been so great that the vessels would have failed to complete the voyage.

The chief points in which improvements have been made are in making use of the expansion power of steam, and in using a higher velocity of piston.

In the early days of steamboats, the pressure of steam in the boilers was only about 5 pounds per sq. inch. Thirty years ago it had increased to 25 pounds, and in some cases to 40 pounds.

In 1871 the average pressure used in nineteen ocean steamers was from 45 pounds to 60 pounds. The coal used was a little over 2 pounds per horse per hour, and the piston speed averaged 375 feet per minute. In 1881 statistics from thirty ocean steamers showed a boiler pressure of nearly 80 pounds, a piston speed of 467 feet per minute, and a coal consumption of 1.83-100 pounds of coal per horse power per hour. At the present date, with triple expansion engines, the working steam pressure is 150 pounds, the piston speed from 750 to 1000 feet per minute, and the consumption of fuel is in some cases below 1½ pounds per horse power per hour. In a steamer using 1,400 horse power and crossing the Atlantic in about 6½ days, the improvements made within the last two or three years makes a saving of about 400 tons of coal per voyage. The use of forced draught at the boilers, the higher piston speed and the larger use of steel, have made a very great change in the gross weight of the engines as compared with the power obtained from them. A few years ago, before triple expansion engines were used, the best engines, including the boilers and the water in them, weighed 480 pounds per horse power. For a 14,000 horse power engine, that would be 3,360 tons as the weight of the steam machinery. In some recent cases the gross weight has been reduced to below 200 pounds per horse power, which for a 14,000 horse power engine would be 1,400 tons, or a saving of 1,960 tons. It is true that the majority of the engines are still made of the heavy design, yet these figures are given to show one direction in which improvements are moving. In some of the smaller war boats the weight of machinery has already been reduced to 136 pounds per horse power, and in torpedo boats to much less.

There is as yet no appearance of any practical substitute for the steam engine. Years ago many thought that the electric engine was in the near future, but marvellous as have been the strides made in the use of electricity, so far from its displacing the steam engine, the demand for electric machinery has produced a special class of steam engines to run the dynamos. For small powers in cities, the gas engine, by which power is obtained by the expansion of gas, has been a successful competitor with the steam engine. The probabilities are that the steam engine will yet be greatly improved, and for years to come will hold its place as the chief motive power in the service of man.

Among the possibilities of the future, one looms out in the distance—an aluminium ship, bright as silver, an aluminium engine driven by the explosion of gas made from the waters of the briny ocean. It floats in an ocean of fuel, and so may drive on as long as provisions last, and the machinery does not break down. No hursting boiler, no dusty coal bunkers, no smoking chimneys, no grimy stokers working in a fiery pandemonium. May we be here to see it!

## SAWDUST IN BALES.

WE learn from the *Northwestern Lumberman* that during the past winter a hydraulic baling press for compressing sawdust and lumber mill refuse generally was perfected in the state of Maine on the banks of the Penobscot. The patents are now the property of the Maine Compress Company, of Bangor, Maine, with C. E. Mitchell, the inventor of the press as general manager. Arrangements have been perfected with a Massachusetts concern for the manufacture of the machines.

A description of the machine and its workings is in brief as follows: Erected at the mills is a tramway along which runs on wheels a box-like receptacle or curb, in which the material is pressed. The press weighs two and a half tons, and a floor space 20x30 feet is required. When the work of pressing begins, the sawdust or other material is dropped into the curb, and by means of power, either from a water wheel or engine, a pressure of 125 tons or more is secured.

It is evident that no covering for a bale, unless it be of metal, can withstand such pressure, and just here comes in one of the notable points of the machine. By a peculiar arrangement, a metallic case is so placed inside the curb, and inside the burlap which finally forms the covering to the bale, as to enable the removal of the matter pressed after it has been confined by wire or rope. The curb is so devised as to open at all four corners, allowing the bale to drop to the floor or ground, leaving the curious lining inside. Then by one motion of the levers the curb is again closed, new binding material is inserted and the whole apparatus is ready for a fresh supply.

Two curbs can be used advantageously to one press, and two men can operate a curb. Sawdust is baled at the rate of four bales to the cord. When these bales are dropped they are very compact, weighing about 325 pounds, the weight varying according to the amount of moisture in the wood. The dimensions of the bales are about 24x28x36 inches, and four of them will hold a cord or 128 feet of sawdust. With one press and two curbs from 30 to 40 cords can be pressed daily. Moist sawdust becomes dry in a short time after baling, and yet the bale remains firm. Still, upon being opened, the sawdust falls apart like meal.

The bale itself is said to be a superior package for shipment, and will be readily taken by the transportation companies at the lowest rate of freight, an average car holding from 20 to 28 cords.

The machine is intended for the compressing of sawdust, shingle hair, refuse wood and bark, and in fact, everything in the shape of waste coming from saw mills, box factories, furniture manufactories and all kinds of wood-working establishments. Refuse from mills, such as bark and sticks, can be baled in the same manner as sawdust, save that no covering is used, it only being necessary to put slate on the top and bottom of the bale. Hemlock bark can now be ground where peeled, pressed into bales, covered with sized cloth to prevent loss of virtue, and then distributed to tanneries through the country at greatly reduced cost. The field of usefulness open to the hydraulic baling press seems practically limitless. In the line of sawdust alone new uses are steadily being discovered, and it is in ever increasing demand. Presses have been steadily in operation during the past two or three months in the state of Maine, at the mills of Weston & Brainard, Showhegan, and the National Wood Company, Wiscasset.

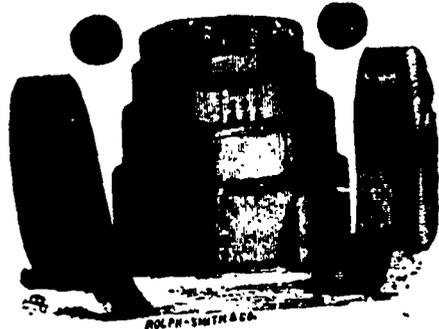
A correspondent of the *London Electrical Review* gives the following account of experiments in converting light into sound: "In the path of a horizontal beam of light I have a revolving opaque disc with perforations at equal distances apart near its periphery. This disc can be made to revolve at any desired number of revolutions per second, i. e., within the limit of sound vibrations per minute. Behind the perforation is this disc, and in a direct line with the ray of light, I have a microphone enclosed in a glass vessel, in which there is a vacuum. The microphone is of the following construction: resting on a carbon contact is a very thin piece of mica, which hangs almost vertically, and is suspended by an extremely thin piece of metallic foil. The front of this piece of mica is covered with a very thin piece of silver foil, which receives the impulse of the light ray when it strikes upon it, and reflecting that back, also itself recoils backwards, and every time it does so breaks contact with a carbon block it rests against. The other part of the apparatus is a sensitive telephone in the air. A battery is included in the circuit between the microphone and telephone. The electrical circuit is from the battery, through the microphone, through the telephone and to battery again. The theory of working is as follows: If I revolve the disc so that the beam of light was cut off from the microphone reflector (in the vacuum), say 16 times a second, I should produce 16 vibrations per second in the telephone included in the circuit (in air) and should then produce the deepest limit of sound. And as I increased the speed of the revolving disc, and cut off the ray of light more rapidly, so would the musical note in the telephone get higher."

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**No. 6 Strachan Avenue, - TORONTO.**

[For the MECHANICAL AND MILLING NEWS.]  
**A HOLIDAY NIGHTMARE.**

By M. McLAUGHLIN, TORONTO.

**H**ELLO! old Ironclad, how are you? How have you been since?"

"Hearty, sir; sound and hearty—nothing has any effect on me."

I was seated in the supper room of a London hotel, having just returned from a fortnight's visit across the channel, when I addressed the above greeting to an acquaintance I had formed two months before on my first arrival in London, and whom I left behind in that overgrown city when I crossed to the continent.

His assurance of his own vigorous health had no particular interest for me. I did not like him. I had met him three times, sometimes four times a day during my first stay in London, and should, in consequence, have been on friendly terms with him. Yet I did not like him. He had deceived me once, and it is difficult to cherish affection for one who has thoroughly deceived you. Try ever so much, restored confidence comes with much difficulty, if it come at all, after such an experience as I had with the individual whom I greeted this evening in the London supper room.

Unalloyed pleasure is notably rare, but travelling under favorable circumstances, to a man with a love that way inclined, is a very near approach thereto. To a Canadian, on his first visit to the London, there are scarcely any bounds to the enjoyment of the opening to him of a world so different from that to which he is accustomed. That is, there is no limitation, were it not for finding himself once in a while a victim of misplaced confidence.

A loaf of bread is a plain and simple thing—though there are heathenish countries that know it not, and unfortunate countries that know it but sparingly. Canada is neither. All Canadians know a loaf of bread, and—if they have never visited London—trust it unreservedly, as I did on my first arrival in that city. With the healthy appetite of a man on a pleasant holiday, somewhat tired after several hours in a flying railway carriage, I cheerfully addressed myself to the party whom I greeted again to-night, as set forth in the opening lines of this true narrative—the London Household Loaf.

Throughout all London, with its millions and millions of human beings of all degrees and conditions, the household loaf is well known, and blindly adhered to. My first look at it, did not please me. Handling it to sever a slice, added nothing favorable to my estimate. It was unquestionably heavy, but I had been some days in England, and was becoming accustomed to heaviness, and anyway, I was on a holiday, and not disposed to be too critical, so without further hesitation, I made a slice or two of it an important part of my meal.

A first sight of Trafalgar Square, with its immense size and its statue of the one-armed hero, its lions and fountains, a peep at the bustling, busy strand, the Thames embankment, with its flower beds, and its Egyptian pillar of olden time, formed a pleasant preparation for a night's rest, and I returned to my hotel and retired to enjoy the sleep of the wearied, innocently anticipating an early turn out in the morning, to begin with a light heart and an elastic step, the sights of London. True it is, no buoyancy of feeling possessed me all that evening, the inspiration of a first night in the greatest city of the world, which ought properly to fill the soul of a colonist, was not spontaneous. I was unexpectedly quiet and heavy, and felt in a degree like unto the bread I had eaten. Happily, however, I am, under almost any circumstances, a capital sleeper. The musical chimes from some church not far off that each quarter hour sounded with melody, were with prompt regularity followed immediately by the chimes from another church, musical too, and in a higher key, and then by a third, equally musical. Soon, however, the triple harmony came to my ear less audibly, and I slept. When Sancho Panza prayed for a blessing on the man who first invented sleep, he surely had not gone to sleep with anything more soothing in his ear than were those perfect London chimes to me. But he had not eaten of London bread. If he had, his pithy benediction would never have become famous. It would never have been uttered. I once heard a melancholy man say he never tasted happiness except when he was asleep. That man never sought his happiness after eating of London's time-honored and most abominable bread. If he had, he would never have gone on record as uniting sleep and happiness in one thought.

#### CHAPTER II.

With a yell of indignation my awakening faculties took in the situation. The experience of the past hour had been only a nightmare—a dough bread nightmare. I was seated in my office at the mill wondering how

many more "revolutions in milling" were likely to arise within a six-month. A loud voice in the outer office enquired for me. My door opened and in walked a master baker, whose place is on the corner of Yonge and York streets. I knew him well, and recognized him instantly, although his usual amiable expression was missing, and in its place was a thunder-cloud that would have struck terror to the heart of Killmany O'Gobble Killmore himself. Under his arm he carried a parcel wrapped in an old *Globe*. Without a word of greeting he slammed the *Globe* and its contents on the table beside me. It came down with a weight suggestive of *Globe* articles of George Brown's days. As he unfolded it, I saw that it was not a cannon ball—it was a loaf of bread—the same old loaf I had thoughtlessly partaken of at tea. He asked me what I thought of it. He moved to the other side of me, and, with blood in his eye, he asked me again what I thought of it. Then he moved again and I felt him standing behind me, his flaming breath raising what hair was on my head, as he demanded again to know what I thought of it. Unable to stir from my chair, my blood froze within me. My fingers turned blue, and my flesh began to creep. Then he started a torrent of abuse, slowly at first like distant thunder, and growing nearer, louder, faster. Faster still did his words smite my ears. In every ascending key that human voice can compass, he asked me what I thought of it, and then he ran down the gamut again, demanding what I thought of it. After a moment's lull he reopened. His waggons, he said were in the yard, the drivers looking at one another with blanched faces. His customers were waiting for their bread, and this was the stuff he had to offer them. He was ruined, and might shut up shop. And then—and he roared it in the voice of a demon—he charged that this bread was made from the flour we had sent him the day before. That was the climax. Such a monstrous impossibility, as that any Toronto baker could fashion such stuff from a respectable brand of flour, unsealed my lips, and produced the yell of indignation that awoke me.

Awake, my first thought was one of gratitude that the bread of my life was the Toronto and not the London variety. I went over the experience of the last hour, wondering as many a one has wondered, what it is that mixes so many scenes and epochs in one nightmare. Then the music of the chimes came in again, and I thought how much more melodious they are than other chimes I had heard. How much of London would surpass my own Queen City of the Lakes as those chimes surpassed ours; I found myself anticipating the sights that would meet me on the morrow in the great city—the streets, and parks, and galleries, St. Paul's, Westminster, the bank, Mark Lane, so familiarly quoted in times of rickety markets, and the British museum. Ah, that would be a treat. The British museum, with ample time at my disposal to see the objects of interest in it including a whole room full of mummies. And the famous Zoological Gardens. I had recently been reading something peculiar about the ostrich, and no doubt there I would have the opportunity of studying the great bird.

Thinking of the mummies brought my thoughts again to the Cleopatra needle on the embankment, now on the banks of the Thames—What a change from the banks of the Nile, where it stood so many ages! Musing thus, I glided into a state between sleeping and waking, and when the quarter chimes fell on my ear again, they were ringing out from the tops of the pyramids, calling the Pharaohs to worship. A heavy feeling within me prevented actual sleep. I dozed, and there passed before me musical chimes and mummies and ostriches, and the banks of the old Egyptian river, until all these different things were merging into each other. I was in the British museum examining with great interest a mummy, which had been in life, not a human being, but an ostrich. It was somewhat the shape of an ostrich now, though so wrapped up was it in strips of decaying linen, wound round and round and round it, that I felt dubious as to whether what was within was, or ever had been, a real ostrich. A tablet beside it told in plain English that the ostrich was in some respects an ordinary bird, simple and foolish to a degree, but possessed of such a marvellous digestive apparatus that it flourished and fattened on small stones, bits of rusty iron, broken glass and kindred delicacies. The particular ostrich which formed the present mummy was famous in the days of the Pharaohs as the only one that had ever died of indigestion. The tablet went on to state that once during the summer vacation that ostrich was stepping grandly along on the sands when it came to the *debris* left by a couple of cockneys—the fragments from their supper of the night before. A broken bottle, on one piece of which the strange word "Bass" was blown offered a tempting morsel, but on coming close to it a

sour, filthy odor arising from the few drops of liquid that remained in one of the angle pieces, was so repulsive that the ostrich passed it untouched, much as his appetite was whetted by the sight of such flinty, broken glass. A few steps further on the innocent bird caught sight of a small piece of a commodity new to it, and which looked tough enough to be savory. Without further cogitation, the unlucky bird swallowed it—swallowed a piece of a household loaf, forgotten on that deserted sand by those holidaying cockneys. In those days stomach pumps were not, and a violent attack of indigestion cut short a promising career, and furnished the British museum with an interesting specimen. The tablet turned my thoughts on bread again, and I saw a Britisher eating bread and cheese—British cheese, active, green, ripe cheese—and as I looked at him, an officer with "Society for the Prevention of Cruelty to Animals" on the collar of his coat, came in and arrested him and carried him off, having first tenderly wrapped up a piece of the cheese and the residents therein, and placed it gently in the pocket of his water-proof coat—his way of making sure of his witnesses for court next day.

The officer must have left the door open after he passed out, for once more I heard the soothing melody of those London chimes. I listened, and forgot both cheese and bread, and passed on again into a sound sleep. I slept, but soon I dreamed of London, of which my brain in waking hours had been so full for many a day past. The many things I had read of it and heard of it, the short experience I had of it, passed in review before me, mingled and merged into each other, and connected themselves with scenes and incidents far removed by years, and distant from that night in that London bed chamber. The clean, crowded, orderly streets centre of the world's commerce and finance and letters. Greatest of all great cities—I saw it all in my dream. Then time flew and I felt the awful solemnity of it. Round and round that picture of immense decay and unbroken stillness my thoughts circled. Instead of being a picture bequeathed to literature by a great intellect, the New Zealander became to me, as I dreamed, a real New Zealander, an original New Zealander. I saw him, and felt him. *I was he.* I stood on the broken arch and felt the some ring in my nose which I had seen in the nose of a New Zealander in Barnum's circus. I was not sketching St. Paul's just then, but was pursuing an investigation into the causes of the fall of London. Familiar as I had made myself with the literature and records of London in its palmy days, no solution of the decline of such greatness had yet come to me that was satisfactory. Evidences of weakness there were, it is true, but weaknesses insignificant in comparison with the evidences of tremendous strength. Standing then on the broken arch of London bridge, I opened a 19th century guide book, a relic found in a pawn shop where it had been pledged with many other articles by a tourist from Illinois. His insane attempts to satisfy the expectations of the waiters, porters, "boots," chamber maids, &c., of the European hotels at which he sojourned, led to his returning home in a condition to start life afresh. Turning over its leaves, I chanced on this astonishing statement. "To supply London one year would require a pyramid of bread 600 feet square at the base, and three times the height of St. Paul's Cathedral." My investigations had made me familiar with the height of St. Paul's in the days of its glory—from 30 to 370 ft. Three times that, a thousand feet, at least! A pyramid of bread 600 feet square at the base, and a thousand feet high!

Great Eiffel, what a pyramid!

But what bread!

Could it be possible that this great nation tried to live on bread of such a consistency that it was capable of being built into a pyramid 600 feet square at the base and 1000 feet high. Surely not! yet there it was in plain English without flaw or contradiction.

One more glance at that awful statement, I dropped the guide-book and sought no further. Utter and total annihilation of a race so fed was inevitable.

The material known as Woodite, devised by Mrs. Wood, a clever Englishwoman, promises to become a very useful substance. Its chief ingredient is caoutchouc. During the past few months it has given good results for a variety of purposes, and is now declared to be especially adapted to many other uses. According to Sir Edward Reed, M. P., it has been produced in divers forms, such as fine sheets and ribbons for water-proof articles, dense blocks for resisting the blows of shot and shell, and particularly satisfactory rings for engine packing. One process converts it into an elastic, sponge-like substance, and another, in which it is mixed with whalebone cuttings, gives it a rough or frictional quality suitable for mats. Some curious naval applications have been worked out. It is made into armor plates, which on being penetrated by a shot, close so tightly that no water is admitted, and it is also formed into light and convenient cylinders for carrying compressed air to drive life-boats, torpedo-boats, and scout-boats.

A

# ❖ SHORT SYSTEM MILL ❖

BUILT BY

Office of Campbell, Stevens & Co.,  
St. Thomas, Aug. 9th, 1888.

S. S. HEYWOOD, Esq., General Manager,  
Geo. T. Smith M. P. Co., Stratford, Ont.

Dear Sir:

Enclosed I hand you our cheque in settlement of contract for changing our mill here from a six to a three break mill, and changing our rolls from gear to belt drive. The result is the mill is comparatively noiseless, the quality of flour entirely satisfactory, and the yield and finish all we could wish. The capacity is increased from 300 to 500 bbls. with only a slight increase of power. Should you have occasion to refer any parties to us, we shall take pleasure in giving them any information in regard to the mill which they may desire.

Very truly yours,

CAMPBELL, STEVENS & CO.

**The Geo. T. Smith Middlings Purifier Co. of Canada**

(LIMITED)

**STRATFORD, ONT.**

**United States Shops: JACKSON, MICH.**



PUBLISHED MONTHLY,

BY

CHAS. H. MORTIMER,

Office, 31 King Street West,

TORONTO, - - ONTARIO.

#### ADVERTISEMENTS.

Advertising rates sent promptly upon application. Orders for advertising should reach this office not later than the 25th day of the month immediately preceding our date of issue.

Changes in advertisements will be made whenever desired, without cost to the advertiser, but to insure proper compliance with the instructions of the advertiser, requests for change should reach this office as early as the 12nd day of the month.

Special advertisements under the headings "For Sale," "For Rent," &c., if not exceeding five lines, 50 cents for one insertion, or 75 cents for two insertions. If over five lines, 10 cents per line extra. Cash must accompany all orders for advertisements of this class.

#### SUBSCRIPTIONS.

The DOMINION MECHANICAL AND MILLING NEWS will be mailed to subscribers in the Dominion, or in the United States, post free, for \$1.00 per annum, 50 cents for six months. Subscriptions must be paid strictly in advance.

The price of subscription may be remitted by currency, in registered letter, or by post-order payable to C. H. Mortimer. Money sent in unregistered letters must be at sender's risk. The sending of the paper may be considered as evidence that we received the money.

Subscriptions from all foreign countries, embraced in the General Postal Union will be accepted at \$1.25 per annum.

Subscribers may have the mailing address changed as often as desirable.

When ordering change, always give the old as well as the new address.

Failure upon the part of subscribers to receive their papers promptly and regularly should be notified at once to this office.

#### EDITOR'S ANNOUNCEMENTS.

Correspondence is invited upon all topics pertinent to the mechanical and milling industries.

This paper is in no manner identified with, or controlled by, any manufacturing or mill furnishing business, nor will a bestowal or refusal of patronage influence its course in any degree. It seeks recognition and support from all who are interested in the material advancement of the Dominion as a manufacturing country, and will aim to faithfully record this advancement month by month.

#### TO OUR READERS.

AUTUMN, winter, spring and summer, following each other in rapid succession, have brought us round again to one of the most interesting events of every year—the Toronto Industrial Exhibition. To mark the event, the MECHANICAL AND MILLING NEWS appears in holiday attire. We hope the thousands of persons who will peruse this Special Number will be pleased not only with its appearance, but also with the contents of its pages.

With the view of placing this Exhibition Number in the hands of every owner and operator of flour mill, saw mill, planing mill and iron working establishment in the Dominion, we have reproduced it in miniature form. To those who may not be familiar with the usual appearance of this journal, and who may receive copies in miniature, it may be necessary to explain that the size of the ordinary number is about three times the size of the miniature. The contents of this paper vary considerably from those of the ordinary number, the latter being of a strictly technical and practical nature, relating exclusively to the industries we represent.

Persons receiving this paper who are not subscribers to it, are invited to become such by sending their name, address, and one dollar currency to the publisher. You will probably get the value of a year's subscription by reading carefully a single number. If you intend visiting the Industrial Exhibition, we shall be glad to welcome you either at the office of publication or at our quarters on the Exhibition grounds.

Not the least valuable reading matter in this paper to the wide-awake mill-man and manufacturer is to be found in the advertising pages, where leading manufacturers call attention to the superiority of their productions. We invite our readers to correspond with them for full particulars and prices of their goods, and in doing so, they will oblige the advertiser by mentioning that they saw his advertisement in the MECHANICAL AND MILLING NEWS.

WE regret that an omission should have been allowed to occur in putting in type Mr. McLaughlin's article entitled "A Holiday Nightmare." In the paragraph beginning "the officer must have left the door open after him," and immediately following the words, "then time flew and I felt the awful solemnity of it," read, "when some traveller from New Zealand shall in the midst of a vast solitude, take his stand on a broken arch of London Bridge to sketch the ruins of St. Paul's."

OBSERVATION justifies the opinion, that if the large class of individuals in our provincial towns who spend so many of the business hours of the day at the hotels in profitless gossip and attempts to evade the Scott Act, would apply themselves with equal assiduity to the duties of some honest calling, the development and prosperity of town and country would progress more satisfactorily. The writer visited a town the other day which was seeking prosperity by voting a bonus of \$10,000 to a manufactory, while many of its citizens waste hours in discussing the method of solving a mathematical puzzle, and seek to make their understandings equal to the task by repeated visits to a back room. The amount of money as well as time (which should mean money) spent in the aforesaid back room may be estimated by the fact that the hotel keeper has been able to afford to pay upwards of \$800 in fines for violating the law. Supposing this hotel to be a sample of the others in the town, what an enormous amount of time and money is wasted! Properly applied, it would be sufficient to lift the town from its lethargic condition and make it resound with the hum of industry.

WE have no desire to belittle the importance of the retaliatory policy which the President of the United States has seen fit to adopt towards this country. If it should be carried out doubtless Canada would experience loss and inconvenience, at least for a time, until a new order of things could be inaugurated. At the same time, we are far from believing that the outcome of such procedure will prove to us an unmixed evil. Already the announcement of the President's intentions toward Canada has begun to bear good fruit. Our people feel that they are being unfairly dealt with, and that an attempt is to be made to tie them hand and foot commercially and force them to surrender their rights to a more powerful neighbor. The feeling has awakened in them a spirit of patriotism and self-reliance which has too long lain dormant, and which nothing perhaps short of circumstances like the present could stir into activity. Even daily journals of this city which for a year past have tried to make us believe that our only salvation from certain ruin lay in throwing ourselves into the arms of our respected uncle over the border, are now making a show of loyalty to the land which makes their existence possible. We are indebted to President Cleveland for having killed at one blow the Commercial Union agitation. Whether retaliation goes into operation or not, Canadians have seen in the President's act enough of the unjust dictatorial Yankee disposition to make them refuse to place themselves in the power of the Republic. They will be more than ever determined to build up a nation of their own, and, as the old song puts it, "paddle their own canoe."

The wisdom of the C. P. railway undertaking becomes now more than ever manifest. Without that transportation line from ocean to ocean, we should be at the mercy of our neighbors; with it, we can, if need be, get along in spite of them. The need of a Canadian canal at Sault Ste. Marie is also obvious, and we hope the time is near when we shall have it. Then with the enlargement of our present canals, we need not be disturbed when the exigencies of United States politics suggest that Republicans or Democrats should take a whack at Canada.

The method adopted by President Cleveland to score a point against his political opponents is certainly original, and may serve its purpose. It is nevertheless unbecoming to the representative of a great nation, out of harmony with the advanced civilization of the age, and must result in lowering President and people in the world's estimation.

Whether the retaliatory measures proposed will really be enforced, is at the present writing difficult to predict. The United States Senate having itself advocated this policy and rejected the fisheries treaty, is not in a position to refuse the President's request, and will probably grant him the required powers. Should this be the case, the President may in turn find himself in an awkward predicament. It is a well known fact that the railway influence is one of the most powerful entering into American political contests. American railroads would lose many millions of dollars should the transportation in bond privileges be discontinued. They would naturally blame Mr. Cleveland and his administration for cutting off so large a part of their business, and would bring to bear their tremendous influence to defeat the Democratic candidates in the forthcoming election. While we hope that no such arbitrary measures as President Cleveland proposes will be carried out, we have the satisfaction of knowing that should it be other-

wise Canadian interests will probably not suffer to a much greater extent than those of the United States.

Canadians will anxiously watch the conduct of the Imperial authorities should further attempts be made by the United States to coerce the Dominion into surrendering rights which President Cleveland himself, by signing the rejected fisheries treaty, admitted we were entitled to. If Great Britain will not back us up under such circumstances, of what use is British connection? The occasion may serve to point out to us our destiny—either a closer alliance with Great Britain, or a separate existence of our own. Meanwhile, it is encouraging to perceive that Canadians show a disposition to "stiffen their backs," as a London journal puts it, and if they are true to themselves, they have no occasion to fear whatever may come.

#### A PLEA FOR A CANADIAN OPERATIVE MILLERS' ASSOCIATION.

TILSONBURG, Aug. 18th, 1888.

Editor Mechanical and Milling News.

DEAR SIR, Enclosed please find \$1.00 for one year's subscription of your valuable paper, to date from 1st of Jan. last, as I have been receiving it since that time. I read your paper with a great deal of interest, and find in it a large amount of valuable information. Can heartily endorse your suggestions in an editorial of some months ago as to the formation of an operative millers' association. I think such an association would benefit both employees and employers. Have no sympathy with any union or association which dictates in an arbitrary manner to employers or causes men to go out on strike because an inferior workman does not command the same rate of wages that his superior does. In my own experience have ever found if a man were worthy of promotion to first place and did what was right by his employer, that his employer always did the same by him.

In the milling business a great many employers are not practical millers, and consequently are very often imposed upon by just such parties you mentioned in your editorial. I have always noticed that those who have risen to first place in any calling have only attained it by applying themselves earnestly, and making a practical study of the subject under consideration. This is very true in regard to those who follow the art and science of milling, if they wish to be successful. How often, though, do we meet persons who imagine all that is necessary to be done is to take a walk through a roller mill, glance occasionally at a roll, purifier or bolting reel, possibly be sweeper and oiler for a short time, and then all at once blossom out into full fledged practical millers. Ere long by a silvery tongue and great representations they prevail on some unsuspecting proprietor to allow them to run his mill as it was never run before, and verily it does not take long to show that the new mode of running gives no satisfaction to proprietors or customers.

It is a very common occurrence to have millers call at a mill enquiring for work, but it is a very uncommon occurrence to find any who take the grade of second class, they are invariably first-class practical millers. Now we all know that there are a great many "camp followers" in the milling profession, as in many others, and some are such good imitation that it is difficult to distinguish the genuine from the counterfeit. To protect employers and worthy millers against this class, I think an association would be a great help. The interchange of ideas and opinions on all topics concerning milling would be very instructive—for which of us has not a great deal to learn? An association of this kind would to a large extent prevent employers from being so greatly imposed upon, would make worthy millers apply themselves more earnestly and give them higher ideas as to what should be done, and consequently the results would be more satisfactory both to themselves and their employers.

I have been waiting for some one more worthy than myself to advocate such an association, but as no one seems disposed to take the initiatory steps, concluded to express my views on the matter, hoping that some one who could do the subject justice would follow in the same line. Would like to see the matter discussed not only by operative millers, but also by mill owners. I think proprietors of flour mills would be fully repaid were they to assist in the formation of a Canadian Operative Millers' Association which would meet, say, once every three months to discuss the art and science of milling in all its various phases. Thanking you for your kind indulgence,

I am, yours truly,

GEO. GEDDES,  
Manager Tilsonburg roller mill.

**LUMBER PRICES.**

| CAR OR CARGO LOTS.                                     |               |
|--|---------------|
| 1 1/2 and thicker clear picks, Am. ins.                | \$34 00/25 00 |
| 1 1/2 and thicker, three uppers, Am. ins.              | 40 00         |
| 1 1/2 and thicker, pickings, Am. ins.                  | 30 00         |
| 1 1/2 and 12 dressing and better.                      | 20 00 22 00   |
| 1 1/2 and 12 mill run.                                 | 15 00 16 00   |
| 1 1/2 and 12 dressing.                                 | 15 00 16 00   |
| 1 1/2 and 12 common.                                   | 12 00 13 00   |
| 1 1/2 and 12 spruce culls.                             | 10 00 11 00   |
| 1 1/2 and 12 maple culls.                              | 9 00          |
| 1 1/2 clear and picks.                                 | 24 00 26 00   |
| 1 1/2 dressing and better.                             | 18 00 20 00   |
| 1 1/2 siding, mill run.                                | 13 00 15 00   |
| 1 1/2 siding, common.                                  | 12 00 13 00   |
| 1 1/2 siding, ship culls.                              | 10 00 11 00   |
| 1 1/2 siding, mill culls.                              | 8 00 9 00     |
| Cull scantling.  | 8 00 9 00     |
| 1 1/2 and thicker cutting up plank.                    | 22 00 25 00   |
| 1 1/2 strips, 4 in. to 8 in. mill run.                 | 14 00 16 00   |
| 1 1/2 strips, common.                                  | 11 00 12 00   |
| 1 1/2 inch flooring.                                   | 15 00         |
| 1 1/2 inch flooring.                                   | 15 00         |
| XXX shingles, sawn.                                    | \$2 40/2 50   |
| XX shingles, sawn.                                     | 1 30 1 50     |
| Eastlake painted iron shingles, per square, (10 feet)  | 4 50          |
| Eastlake painted tin shingles, per square.             | 4 50          |
| Eastlake genuine galvanized iron shingles, per square. | 7 00          |
| Imitation brick siding, per square.                    | 3 50          |
| Special siding, per square.                            | 3 50          |
| Lath, sawn.  | 1 80          |

| YARD QUOTATIONS.                                 |             |
|--|-------------|
| Mill cull boards and scantling.                  | 10 00       |
| Shipping cull boards, promiscuous widths.        | 12 00       |
| Shipping cull boards, stocks.                    | 13 00       |
| Scantling and joist, up to 16 ft.                | 14 00       |
| " " " 18 ft.                                     | 15 00       |
| " " " 20 ft.                                     | 16 00       |
| " " " 22 ft.                                     | 17 00       |
| " " " 24 ft.                                     | 19 00       |
| " " " 26 ft.                                     | 20 00       |
| " " " 28 ft.                                     | 22 00       |
| " " " 30 ft.                                     | 24 00       |
| " " " 32 ft.                                     | 26 00       |
| " " " 34 ft.                                     | 28 50       |
| " " " 36 ft.                                     | 30 00       |
| " " " 38 ft.                                     | 32 00       |
| " " " 40 to 44 ft.                               | 35 00       |
| Cutting up planks, 1 1/2 and thicker, dry board. | 25 00 26 00 |
| Dressing stocks.                                 | 18 00 20 00 |
| Picks, American inspection.                      | 40 00       |
| Three uppers, American inspection.               | 50 00       |
| Cedar for block paving, per cord.                | 5 00        |
| Cedar for Kerbing, 4 x 14, per M.                | 12 00       |

| B. M.                         |             |
|-------------------------------|-------------|
| 1 1/2 inch flooring, pressed. | 25 09 30 00 |
| 1 1/2 " " rough.              | 14 00 15 00 |
| 1 1/2 " " dressed.            | 23 00 25 00 |
| 1 1/2 " " undressed.          | 14 00       |
| 1 1/2 " " dressed.            | 16 00 20 00 |
| 1 1/2 " " undressed.          | 12 00 14 00 |
| Beaded sheeting, dressed.     | 18 00 20 00 |
| Clapboarding, dressed.        | 12 00       |
| XXX sawn shingles, per M.     | 2 75 2 90   |
| Sawn lath.                    | 2 25        |
| Red oak.                      | 20 00 25 00 |
| White.                        | 25 00 30 00 |
| Basswood, No. 1 and 2.        | 18 00 20 00 |
| Cherry, No. 1 and 2.          | 50 00 60 00 |
| White ash, No. 1 and 2.       | 25 00 30 00 |
| Black ash, No. 1 and 2.       | 20 00 25 00 |

**MONTREAL PRICES.**

| Lumber, Etc.            |               |
|-------------------------|---------------|
| Ash, 1 to 4 in., M.     | \$13 00/20 00 |
| Birch, 1 to 4 in., M.   | 16 00 25 00   |
| Blackwood.              | 13 00 20 00   |
| Walnut, per M.          | 55 00 95 00   |
| Butternut, per M.       | 25 00 40 00   |
| Cedar, flat.            | 00 04 00 06   |
| Cherry, per M.          | 65 00 90 00   |
| Elm, Soft, 1st.         | 15 00 17 00   |
| Elm, Rock.              | 25 00 30 00   |
| Maple, hard, M.         | 20 00 25 00   |
| Maple, Soft.            | 16 00 24 00   |
| Oak, M.                 | 40 00 80 00   |
| Pine, select, M.        | 35 00 40 00   |
| Pine, 2nd quality, M.   | 22 00 27 00   |
| Shipping Culls.         | 14 00 16 00   |
| Mill Culls.             | 8 00 10 00    |
| Lath, M.                | 1 70 1 85     |
| Spruce, 1 to 2 inch, M. | 10 00 13 00   |
| Culls.                  | 4 50 6 00     |
| Shingles, 1st quality.  | 2 00 3 00     |
| " " " 2nd "             | 1 25 2 00     |

| Cement, etc.                 |              |
|------------------------------|--------------|
| Portland Cement, per barrel. | \$ 2 45/2 75 |
| Roman "                      | 2 70 3 00    |
| Fire Bricks, per M.          | 2 50 25 00   |

**NEW YORK PRICES.**

| WHITE PINE.  |               |
|--|---------------|
| Uppers.  | \$15 00/16 00 |
| Selects.   | 40 00 53 00   |
| Fine common.   | 36 00 48 00   |
| Cutting up.  | 28 00 32 00   |
| Common.  | 17 00 24 00   |
| Norway.  | 19 50 26 50   |
| Pickets.   | 14 00 23 00   |
| Shippers, according to quality, for different ports. | 17 50 52 00   |
| Coffin boards.                                       | 21 00 23 00   |
| Box.   | 15 50 17 00   |
| Ceiling.   | 24 00 42 00   |
| Shelving.  | 25 00 32 00   |
| Moulding.  | 34 00 37 00   |
| Bevel siding.  | 15 00 22 00   |
| Bridge timber.                                       | 38 00 50 00   |

| EASTERN SPRUCE.          |             |
|--------------------------|-------------|
| 9 to 12 in.              | 14 00 15 00 |
| 8 to 12 in.              | 14 00 14 50 |
| 6 to 12 in.              | 12 00 14 00 |
| 6 to 9 in.               | 13 00 14 00 |
| Special lengths.         | 16 00 17 00 |
| Lath.                    | 2 00        |
| Piling, per lineal feet. | 5 1/2 06    |

| SHINGLES.            |              |
|----------------------|--------------|
| Pine, 16 in., extra. | \$ 3 10/3 25 |
| 18 in., extra.       | 4 65 4 75    |
| 18 in. clear butts.  | 3 65 3 75    |
| 16 & 18 in. stocks.  | 5 50 6 00    |
| Cedar.               | 4 50 5 75    |
| Cypress.             | 6 00         |
| Redwood.             | 5 00 6 00    |
| Various widths.      | 1 00         |

| HEMLOCK. |             |
|----------|-------------|
| Timber.  | 12 00 12 50 |
| Joists.  | 11 50 12 00 |
| Boards.  | 12 00 12 50 |
| Lath.    | 1 90 2 00   |

| DRESSED LUMBER, CAR LOAD LOTS. |             |
|--------------------------------|-------------|
| No 1 flooring, 3/4 in.         | 23 00 24 00 |
| No 1 ceiling, 3/4 in.          | 25 00 26 00 |
| No. 1 ceiling, 3/4 in.         | 18 00 19 00 |
| Timber.                        | 14 50 15 50 |

**ALBANY, N. Y. PRICES**

| SHINGLES AND LATH.     |      |
|------------------------|------|
| Shingles, shaved pine. | 6 50 |
| 2d quality.            | 5 00 |
| Sawed, extra.          | 4 80 |
| Sawed clear butts.     | 3 75 |
| Cedar, xxx.            | 3 50 |
| Shingles, cedar mixed. | 2 60 |
| Hemlock.               | 2 25 |
| Lath, pine.            | 2 25 |
| Spruce.                | 2 00 |
| Hemlock.               | 1 75 |

| HEMLOCK.                |        |
|-------------------------|--------|
| Boards, 10 in., each.   | 13 1/2 |
| Joist, 4x6, each.       | 33     |
| Joist, 2 1/2 x 4, each. | 13     |
| Wall strips, 2x4.       | 10     |

| PINE.  |             |
|--|-------------|
| 2 1/2 in. and up, good.                        | 58 00 60 00 |
| 4ths.  | 53 00 55 00 |
| Selects.                                       | 48 00 50 00 |
| Pickings.                                      | 43 00 45 00 |
| 1 1/2 to 2 in., good.                          | 50 00 55 00 |
| 4ths.  | 45 00 52 00 |
| Selects.                                       | 40 00 45 00 |
| Pickings.                                      | 35 00 38 00 |
| 1 in., good.                                   | 50 00 55 00 |
| 4ths.  | 45 00 52 00 |
| Select.  | 40 00 43 00 |
| Pickings.                                      | 35 00 38 00 |
| Cutting up, 1 to 2 in.                         | 30 00 35 00 |
| Bracket plank.                                 | 32 00 36 00 |
| Shelving boards, 12 in. and up.                | 28 00 32 00 |
| Dressing bds., narrow.                         | 20 00 22 00 |
| Sapping boards.                                | 16 00 18 00 |
| Box boards.                                    | 13 00 15 00 |
| 10 in. boards and better.                      | 30 00 34 00 |
| Common.  | 16 00 22 00 |
| 12 in. boards dressing and better.             | 32 00 36 00 |
| Common.  | 16 00 22 00 |
| 1 1/2 in. siding selected 13 ft.               | 43 00 45 00 |
| Common.  | 16 00 21 00 |
| 1 in. siding selected.                         | 43 00 46 00 |
| Common.  | 14 00 19 00 |
| Norway, selected.                              | 24 00 26 00 |
| Common.  | 12 00 16 00 |
| 10 in. p. k. 13 ft. dressing and better, each. | 45 00 50 00 |
| Culls.   | 23 00 25 00 |
| 10 in. boards, 13 ft., dress, and better each. | 28 00 33 00 |
| Culls.   | 17 00 22 00 |

**WANTED--Second-hand Buck-wheat Huller or Refiner. Capacity 10 to 15 bushels per hour.**  
**JOSEPH BISHOP,**  
 Inkerman Mills, Ont.

**MILLERS' AND MANUFACTURERS' INSURANCE COMPANY.**

**HEAD OFFICE,**  
 24 Church Street, Toronto.

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**W. H. HOWLAND,** Toronto, Vice-President.

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**W. BELL,** GUELPH  
**H. N. BAIRD,** TORONTO  
**W. WILSON,** TORONTO  
**J. L. SPINK,** TORONTO

**HUGH SCOTT,** Managing Director  
**DOUGLAS SUTTON,** Secretary.  
**GEO. HANSON,** Inspector.

**OBJECTS.**  
 To prevent by all possible means the occurrence of avoidable fires.  
 To obviate heavy losses from the fires that are unavoidable by the nature of the work done in mills and factories.

To reduce the cost of the insurance to the lowest point consistent with the safe conduct of the business.

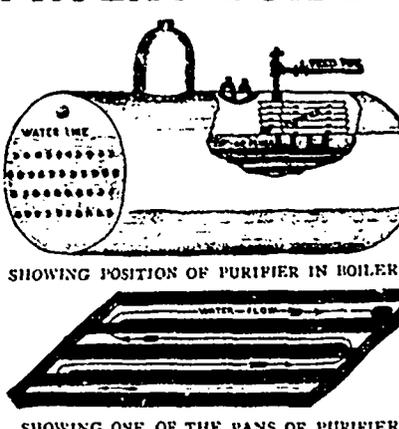
*The Combined Losses and Expenses on the business of 1887 was under Fifty per cent. (50%)*

**ROSCOE B. WHEELER**  
 PROSECUTOR  
**PATENTS**  
**FINNEY & WHEELER**  
 Prosecute and Defend Patent Causes in U.S. our ts.  
**PATENT BUSINESS EXCLUSIVELY.**  
 Opinions given on Questions of Infringement.  
 Fees reasonable. Hand Book Free.  
 Rooms 9, 10, 11 No. 94 Griswold St., opp. P. O.  
**DETROIT, MICH.**

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 WHOLESALE  
**Grain, Flour and Feed Merchants**  
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 CORRESPONDENCE AND SAMPLES SOLICITED.

**RADIGAN'S MILL BUCKETS**  
**JOHN RADIGAN,**  
 MANUFACTURER AND DEALER IN  
**Elevator Buckets and Elevator Bolts**  
 Trade Supplied.  
 ADDRESS  
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 SEND FOR CIRCULAR AND PRICE LIST.

**PATENT BOILER WATER PURIFIER.**  
 No Purger Used!  
 Heat alone does it!



THIS PURIFIER ENTIRELY PREVENTS THE FORMATION OF SCALE UPON SHELL AND FLUES OF ANY BOILER IN WHICH IT IS USED. ALL IMPURITIES ARE EXTRACTED FROM THE WATER BEFORE IT REACHES THE WATER LINE, AND ARE DEPOSITED IN THE PANS OF THE PURIFIER.

THESE PANS CAN BE REMOVED, CLEANED AND REPLACED WITH VERY LITTLE TROUBLE, AND IN A VERY SHORT TIME, WITHOUT EMPTYING THE BOILER OF HOT WATER, WHICH MEANS A SAVING OF TIME, LABOR AND FUEL.

**J. W. HERMAN,** 114 1/2 KING ST. WEST, TORONTO, ONT.

**ARTISTIC DESIGNING**  
**WOOD**  
**CHAS. SANDHAM**  
 DESIGNS  
 ESTIMATES GIVEN  
 TORONTO

**JOSEPH HALL MACHINE WORKS,**  
 Oshawa.

Circular Saw Tables; Wood Turning Lathes; Morticing Lathes. Car Morticing Machine; Wood Benches; Wood Shapers.  
 Large Surface and General Purpose Wood Planing Machines.  
 Graining Machines; Tenoning Machines; Sand Belt Machine.  
 Swing Sawing Machine; Testing Machines for Threshing Machines.  
 Horizontal Boring Machines; Upright Boring Machines; Facing Machines.  
 Iron Turning Lathes; Iron Column Drilling Machines.  
 Iron Punching Machine; Punching and

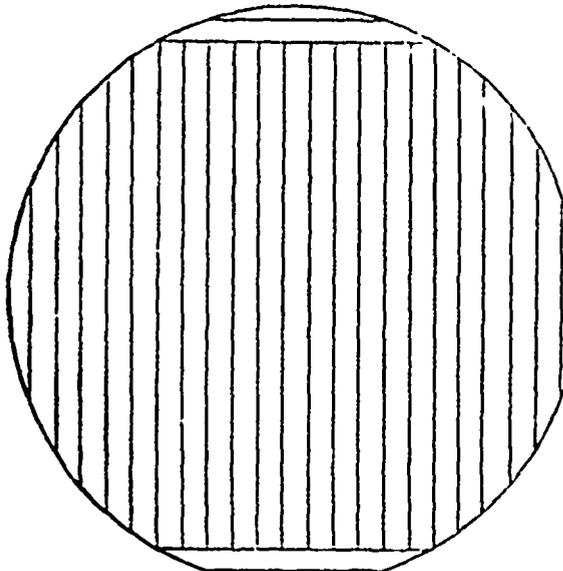
Shearing Machine.  
 Key Seat Cutting Machines; Cutting and Shearing Machines.  
 22 Spindle Gang Drilling Machines; Power Shears.  
 Large Iron Shaper, English make; Milling Machine.  
 Schlenker Patent Bolt Cutting Machine.  
 No. 6 Northey Steam Pump; Large heavy Tumbling Barrels.  
 Steam Heater, 51 x 72 inches.  
 Bradley Cushioned Trip Hammer; Iron Boring Lathes.  
 Foundry 3-Legged Drop, 35 ft. high, 1100 pound Drop; 37 inch Gear Wheel.  
 Steel Boiler, 68 x 168 inches.  
 Horizontal Engine, Cylinder 18 x 36.  
 Turret Head, Brown & Sharpe, Mill Screw Machine.  
 Lefell Water Wheels; Portable Engines.  
 Fairbanks Platform Scales; Steam Pipe and Fittings.  
 Fire Extinguishers; Sand Blast for sharpening or cleaning Files.  
 Belting; Shafting; Hangers; Pulleys; Couplings.  
 Wrought Iron Heater for glue and Wood Circular Saws.  
**Joseph Hall Machine Works, Oshawa.**  
 John Livingstone, Trustee.

**TIMEWELL & SON,**  
 Designs, Plans and Specifications prepared for all class of buildings. Tenders obtained, and buildings superintended in any part of the province. Having had a large experience in the construction of Grain Elevators and Mills, we are in a position to supply working plans, etc., for these buildings, and the necessary machinery for any capacity on the shortest notice. Correspondence solicited. No charge for preliminary designs.  
**ARTHUR T. TIMEWELL,** M. C. S. C. E.,  
**ARTHUR W. TIMEWELL,**  
 Caldwell Block, Main St., Winnipeg, Man.

Established 1869.  
**REYNOLDS & KELLOND,**  
 Solicitors of Patents, and Experts in Patent and Trade Mark Causes,  
**24 KING STREET EAST, TORONTO.**  
**R. A. KELLOND,** RESIDENT PARTNER.  
 Montreal Office: 156 St. James St.; F. H. Reynolds, Resident Partner. Washington Office: Pacific Bldg., F. Street. Agencies in all foreign capitals.

ECONOMICAL ADVANTAGES OF THE GANG MILL.

IN these days of close competition and small profits, writes a Wisconsin lumber manufacturer in the Timberman, it behooves us to take into consideration the wide difference between the saw kerf of a rotary and of a gang mill. Everyone knows what a rotary saw does, that it takes about three-eighths of an inch kerf; and this article is more for showing what a gang can do in the way of saving lumber. If a rotary could be run on timber alone, there would be scarcely any waste of lumber, and I propose to show that a gang practically cuts its logs into timber, (figuratively speaking), with little, if any waste. The following diagram representing a log of the diameter of fourteen inches at the top end, sixteen feet long, and scaling by Scribner's rule, 114 feet, will assist in the explanation (scale 1 to 8):

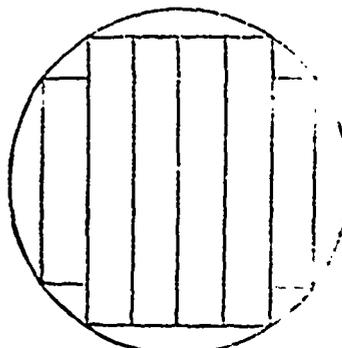


The sawyer slabs his logs into the above twelve-inch cant, and it is thrown to the gang; in going through, it cuts into the following lumber, as per diagram:

Table showing lumber dimensions: 4 pieces 2x12 16 ft. 128 feet, 2 pieces 2x8 16 ft. 42 1/2 feet, 170 1/2 feet.

a clear gain of fifty-seven feet. Besides this, if the log has any swell to it at all, there will be two pieces 2x6 8 feet out of the side slabs from the gang, making sixteen feet more, a total of 186 1/2 feet, a gain of seventy-three feet, or over sixty per cent. upon the log scale. Had the log been sawed into boards, the result would be nearly the same, as follows (scale 1 to 8):

Table showing lumber dimensions from cant and swell: In this case we get 6 1x12 16 95 feet, 2 1x10 16 27, 2 1x8 16 21, 1 1x6 16 8, Also from top and bottom slabs 2 1x6 16 16, From swell of logs we get 2 1x6 12 12, Total 186 1/2.

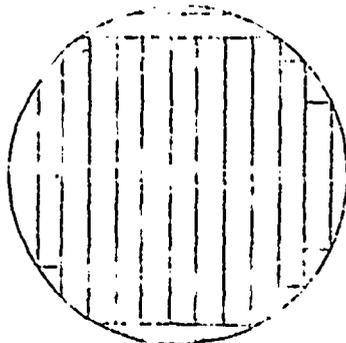


All of these boards are sawed full inch in thickness and the dimension one and seven-eighths inches. The saw-kerf makes the full width of cut two inches on dimension, and one and one-eighth on boards. The saw-kerf is therefore a loss only in the sawing of boards, while the short lumber which is cut from the sides of the cant amounts to more in sawing inch than two-inch, nearly if not quite making the two equal, in small logs. Were the logs squared into timber by a rotary saw, the account would be:

Table showing lumber dimensions from rotary saw: 1 piece 10x10 16 133 1/2 ft, 4 pieces 1x6 16 32 ft, The gain in the swell would be about 16 1/2 ft, 4 pieces 1x4 16 21 1/2 ft, 183 1/2 ft.

or the same as the gang makes in cutting two-inch. In large logs the gain should be greater than in small logs owing to the fact that when you gain one or two boards twenty to twenty-four inches wide you are getting a good deal of lumber. I will choose a cant having a

diameter of twenty-four inches and slabbed down to twenty and a half inches in thickness. The log scales 404 feet at sixteen feet. The gang cuts it into twenty-



one boards each having a face at the end of log. These boards scale as follows:

Table showing lumber dimensions from rotary saw: 11 pieces 1x20 16 203 feet, 2 pieces 1x18 16 48, 4 pieces 1x16 16 two of them a bit the wainy at one end 85, 2 pieces 1x14 16 37, 2 pieces 1x10 16 27, 2 pieces 1x8 16 21, Short lumber 2 pieces 1x6 16 10, Slabbing on rotary 2 pieces 1x8 16 21, 542.

Showing a gain of 138 feet or about thirty-four per cent. The above diagrams and figures seem to demonstrate most conclusively that the small log is slighted by the scale rule, that is, it is not allowed enough feet. The Scribner rule which puts the fourteen-inch log above at 114 feet, is more generous than any of the other rules, none of which place it higher than 100 feet. While some of the figures on the lumber may be a little too high, yet it is a well known fact that small logs overrun more than large one, and when gang sawed, they will yield from forty to fifty per cent. more lumber than they represent in the log. The writer once sawed a lot of very small logs running about twenty to the thousand feet, which overran just fifty per cent. in merchantable lumber. Some of it was a trifle wainy, but it was all saleable. I have had other logs scaling from twelve to fifteen to the thousand which cut out from thirty-five to forty-five per cent. There are always hidden defects in the log which the scaler cannot see, and which make a good deal of edging and trimming necessary to cut off the bad spots, and this reduces the gain somewhat. I feel certain, however, that a day's sawing of perfectly sound, straight and smooth logs, would yield over fifty per cent. increase upon the log scale, and I know from personal observation that a man can rely upon getting forty per cent. from an average lot of small logs.

There is something to be said about the method of scaling logs prevailing on the Mississippi river. The above figures are based upon Black river logs; the gain is not so great on Chippewa scale, while Stillwater scale, where it is done with calipers, is more than likely to make the buyer's lumber scale come out short of what he pays for in the log. I heard of a man who bought a Stillwater raft, had it sawed right there, rafted every piece of the lumber, and did not make any shingles, and the lumber fell short some 50,000 feet of the log scale.

A large proportion of the logs sawed by La Crosse mills are small, and it is well known there that they cut out liberally. In 1887 the log scale of the Black river boom was 169,000,000, at least thirty-five millions of which was sold to down down parties. The mill cut out 210,000,000. To these we must add some thirty million Chippewa logs which were sawed there, making 148,000,000. As will be seen from the above, the gain was about 40 per cent. over log scale.

I do not wish to make my readers think from this that La Crosse or other mills are coining fortunes from sawing small logs. If one pays \$8 for the logs and \$2.50 for sawing, and sells his lumber in the raft at \$10.50, \$8.50 and \$5.00, the ruling price, he makes about 8 per cent. on his investment. But the point is this: without gang mills it would be impossible to make even that, as a rotary would take one-eighth more kerf than a gang and make the profit pretty slim, unless it could all be put into timber, and the market would not stand timber alone. The gang theoretically cuts the log into timber and yet make saleable lumber of all kinds.

Exhaustive experiments in the manufacture of aluminum have recently been made at the Krupp works at Essen, Germany, and with the most gratifying results. The metal is turned out pure in chunks, some of which weigh nearly 100 pounds, and the cost of production is said to be considerably less than 25 cents a pound. A company has been formed in England for managing the process on a large scale and its patents also cover the manufacture of sodium, potassium and artificial cryolite.

WHOLESOME SUGGESTIONS.

THE organ of the A. O. S. E. gives the following "wholesome suggestions":

Never start your fires before you are sure that you have sufficient water.

Do not start your fires with the damper shut, nor while the manhole is off.

Don't fail to lift your safety valve off its least once a day.

When using shavings or soft coal clean your flues twice a week.

Do not fail to try your gauge cocks every hour when you are depending on the glass gauge.

With pea or buckwheat coal carry your fires about 4 inches deep, with egg or lump from 6 to 8 inches with natural draught. With forced draught double the above depth.

Never let a stranger drop in and fire for you without watching him.

Never start your engine with the cylinder cock closed, nor the governor belt off, nor the piston rod gland out.

Never break up your fire any more than you can possibly help when slicing it.

Never hang your coat or fire tools on the safety valve lever, unless you desire the attendance of the coroner.

Never try to stop a ball governor with your head, nor measure the shortest distance with your head between the cross-head and cylinder head, or the result will be a smashed head.

Test your steam gauge at least once every six months.

Never start your pump before opening your delivery valve on the boiler.

Open your main stop valve gradually and before leaving at night close them.

When your pump refuses to deliver water don't cuss its maker or his mother-in-law; don't get off your balance even should the water be out of sight or hearing. Cover your fires heavy, closing ash-pit and leaving furnace door open. See that you are in your normal condition and self-possessed. If necessary shut down the engine. Lock the engine room door on the pump side; call the fireman and form an investigating committee and go to work.

NEW MANITOBA WHEAT STANDARDS.

THE following new standards of Manitoba wheat have been promulgated by the Dominion Government under the provisions of the General Inspection Act.

Extra Manitoba hard wheat shall be sound and well cleaned, weighing not less than sixty-two pounds to the bushel, and shall be composed of at least eighty-five per cent. hard red fife wheat grown in Manitoba or the Northwest Territories of Canada. No. 1 Manitoba hard wheat shall be sound and well cleaned, weighing not less than sixty pounds to the bushel, and shall be composed of at least two-thirds hard red fife wheat grown in Manitoba or the Northwest Territories of Canada.

No. 2 Manitoba hard wheat shall be sound and reasonably clean, weighing not less than fifty-eight pounds to the bushel, and shall be composed of at least two-thirds hard red fife wheat grown in Manitoba or the Northwest Territories of Canada.

No. 1 hard white fife wheat shall be sound and well cleaned, weighing not less than sixty pounds to the bushel, and shall be composed of not less than sixty per cent. hard white fife wheat grown in Manitoba or the Northwest Territories of Canada, and shall not contain more than twenty-five per cent. of soft wheat.

No. 1 Manitoba Northern wheat shall be sound and well cleaned, weighing not less than sixty pounds to the bushel, and shall be composed of at least fifty per cent. hard red fife wheat grown in Manitoba or the Northwest Territories of Canada.

No. 2 Manitoba Northern wheat shall be sound and reasonably clean, of good milling qualities and fit for warehousing, weighing not less than fifty-eight pounds to the bushel, and shall be composed of at least fifty per cent. of hard red fife wheat grown in Manitoba or the Northwest Territories of Canada.

The following account of the use of electricity by armies is given by the Electrical Review: "The scouts or signal officers carry in their knapsacks six small incandescent lights of the different primary colors. These are connected by a very fine wire with a small battery in the knapsack. Attached to the small globes that inclose the lights is a very small oval electric motor, operated by an independent battery. When one scout wishes to communicate with another he sends one globe high in the air and then turns on the electric fluid that illuminates it. By the use of the different colored globes and by combinations a conversation of any length can be carried on at night at long distances."

# JONES' -:- SHORT -:- SYSTEM

THE LATEST AND BEST

**FOR MERCHANT AND CUSTOM MILLS.**

**JONES' SHORT SYSTEM FOR CUSTOM MILLS.**

In our Short System of milling we are using new and improved methods of bolting and purifying which are our own inventions.

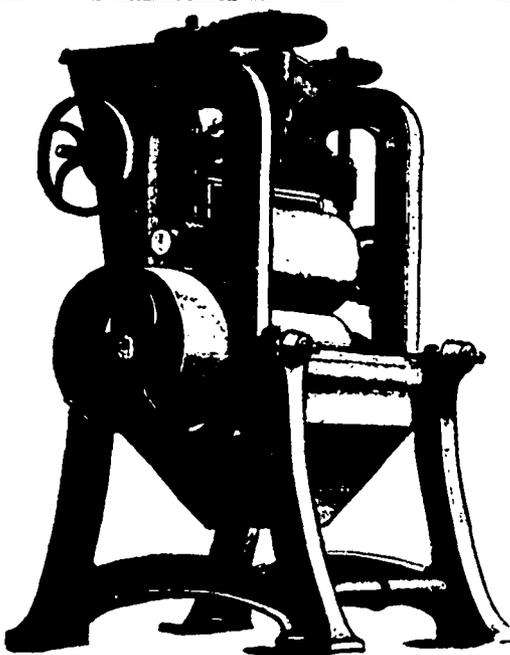
Our Purifier and Aspirator combined is the best machine we know of for the proper handling of middlings.

The middlings are graded before the blast is applied to them, each grade treated separately on the same machine.

Our Bolting and Scalping Reels are round, running at a slow motion, the cloth being covered the whole length of the reel, no matter how slow the bolt is fed. This we consider one of the most important points in the manufacture of flour.

Old style reels can be changed to this same principle, producing the same results.

Millers who desire to improve their flour would do well to look into the merits of these machines before purchasing.



Is the simplest and best in the market. The results are equal to any long system, and the cost less. Grist can be ground as brought in if desired, and can be handled as conveniently as if ground in mill stones. One Roller Disc machine, two corrugated rolls, one smooth roll one stone roll, one bran cluster, two flour-dressers and one purifier, with proper cleaning machinery and elevators, is ... the machinery necessary in this system to make a straight grade of flour equal to the straight grades made in any long system.

CAPACITY—50 Barrels per Day from Fall Wheat.

## TESTIMONIAL

IN FAVOR OF THE SHORT SYSTEM, 'SING FIVE SINGLE ROLLS TO COMPLETE THE WORK.

JAMES JONES, ESQ., Thorold, Ont.

ABINGDON, September 13th, 1887

Dear Sir: Our mill has now been run long enough to give us an opportunity to test it thoroughly, and we are satisfied with it, the yield and quality are excellent. It takes all the flour out of the wheat, and for capacity, instead of making sixty (60) barrels, as the contract called for, we are running from 85 to 100 barrels, and clean it up in good shape. The stone roll, on which nearly all the best flour is made, works with less attention than any other machine in the mill, and does its work well. We feel ourselves indebted to you for the prompt manner in which you carried out your contract.

Yours truly,

R. A. SHEPHERD.

For further particulars, apply to **JAMES JONES & SON,**  
THOROLD, ONT.

**UNEXCELLED!**

**UNEQUALED!**

**UNRIVALED!**

## THE HERCULES Automatic Wheat Scourer and Separator

**THE ONLY WHEAT SCOURER  
EVER AWARDED A GOLD MEDAL.**

**THE ONLY AUTOMATIC WHEAT SCOURER  
EVER INVENTED.**



**THE ONLY WHEAT SCOURER**

*That Needs No Attention Whatever.*



THE HANDSOMEST AND MOST DURABLE MACHINE ON THE MARKET.

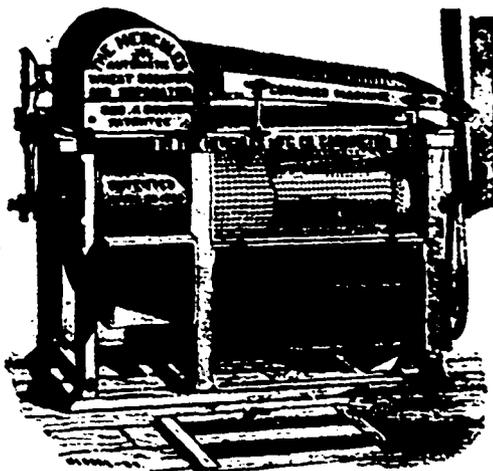
**DUSTLESS**

**THE HERCULES**

**MAGNETIC ATTACHMENT**

**METALLIC SUBSTANCES.**

NO EXTRA CHARGE FOR SAMP.



**FRIEPROOF**  
**THE HERCULES**

**WARRANTED**  
*To Improve the Color of the Flour  
in any Mill.*

IT WILL REMOVE  
**FOUR TIMES MORE FUZZ**  
THAN  
**ANY OTHER WHEAT SCOURER**

WE ARE NOW READY, AFTER EXHAUSTIVE TESTS, TO PLACE UPON THE MARKET.  
**THE HERCULES DUSTLESS RECEIVING SEPARATOR,**  
**THE HERCULES AUTOMATIC BUCKWHEAT SCOURER,**  
**THE HERCULES AUTOMATIC CORN SCOURER.**

**SATISFACTION GIVEN OR NO PAY.**

Write for Circulars, Prices and Guarantee on all the above machines. Address

**THE HERCULES MFG. COMPANY,**  
PETROLIA - ONTARIO.

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### THE SPANISH RIVER MILLS.

THE accompanying is a cut of the mill property of Messrs. Arnold & Fulson, of Albany, N. Y., on the Spanish River. The limits in connection with this mill aggregate almost 400 square miles fairly timbered with pine. Both mill site and 300 square miles of the timbered lands originally belonged to Mr. John Cameron. He erected the first mill in 1864. From him the property passed into the hands of Mr. M. Smith, and later to Mr. John Chaffy, whose heirs sold to Messrs. Arnold & Fulson. They erected entirely new mills on the old site, introducing modern equipment and largely increasing the capacity. Both lath and lumber are manufactured, the annual product of the latter aggregating 25,000,000 feet. The new mill was erected in 1883, and has been running steadily since that time and quite a settlement has sprung up around it. Steam power is employed entirely. Facilities for transportation are provided by three steam barges owned by the proprietors of the mills. Between 80 and 100 men are constantly employed.

#### MR. A. H. CAMPBELL.

MR. ARCHIBALD HAMILTON CAMPBELL of the Muskoka Milling and Lumber Co. and President of the Ontario Lumbermen's Association was born at Carbrook, Stirlingshire, Scotland in 1819. His father was John Campbell, a lawyer of eminence at the Scottish bar. He was educated at the Edinburgh Academy and University, whose courses are both chiefly classical. From youth he was attached to out-door sports and athletic exercises, and to the study of mechanics and mathematics. After the completion of his studies he commenced banking, and later on, the study of law. He finally concluded to embark his fortunes in Canada, and on his arrival in this country became involved in the chimerical mining schemes on the shores of Lake Huron. When the futility of these undertakings became patent, Mr. Campbell turned his attention to other labors, and accepted a

trict lying north of Parry Sound. Over 400 square miles of exclusively pine lands, mostly heavily timbered, are now held by him. On this he has several mills, both for shingles and lumber. The principal one is that on the Seguin river, having a capacity of



MR. A. H. CAMPBELL.

15,000,000 feet annually. Splendid facilities are provided both for manufacture and shipment. First-class docks have been erected, to and from which four barges ply connecting with the several ports of Georgian Bay and Lake Huron.

Mr. Miller has very wide business connections in the city of

D. Maxwell, of Paris, has placed his order with Goldie & McCulloch for a new 75 h. p. Wheelock engine.

A Harris, Son & Co., of Brantford, are putting a Wheelock engine of 150 h. p. in their new factory.

J. T. Hunter, Berlin, is about adding a 40 h. p. Wheelock engine of Goldie & McCulloch make to his factory.

The Galt Knitting Co. have placed their order with Goldie & McCulloch for one of their Wheelock engines of 100 h. p.

F. Greybill & Co., of Waterloo, are about putting in a Wheelock engine and steel boiler of 35 or 40 h. p. of Goldie & McCulloch's make.

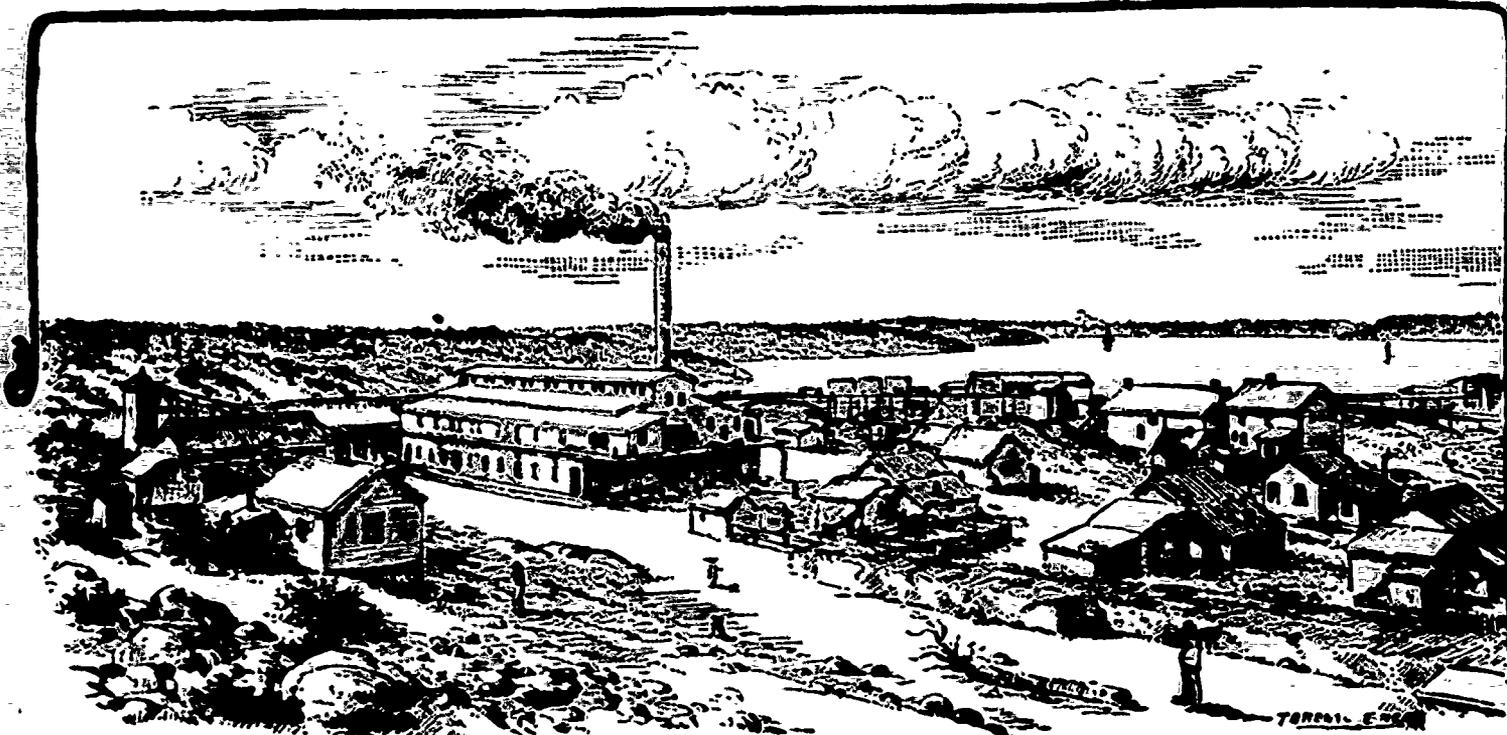
C. J. Smith, of Moosomin, Man., has placed his order with Goldie & McCulloch for a 75 h. p. Wheelock engine and 100 h. p. steel boiler.

The Hamilton Electric Light Co. are now making preparations to receive a new Wheelock engine of 270 h. p. from the works of Goldie & McCulloch.

Harum Iron & Wire Works, of Windsor, are placing a 40 h. p. Wheelock engine and 60 h. p. boiler from Goldie & McCulloch in their new shops in Walkerville.

#### MR. D. R. ROSS.

IN the midst of the broad and fertile fields of Zorra in the county of Oxford nestles the town of Embro. Near by, on what has long been known as the "Scotia" farm, D. R. Ross was born forty years ago. Six years previously his father had come thither from Scotland and settled on the tract of land which still remains in the hands of his children. On both sides were branches of the river Thames, one of which contained an excellent water power. About the sixth year of his residence there he erected a flour and grist mill on this site, and a few years later added oatmeal machinery. This first mill was destroyed by fire in 1864, and replaced by the present "Scotia" mills in 1865-6, which, by the death of Mr.



SAW MILLS AT SPANISH RIVER, ONT.

position as manager in the Bank of Montreal. In 1854 he became connected with a Peterboro' lumber venture, and since then has been engaged without interruption in that business.

During the Oregon disputes, which seemed so likely to involve England and the United States in war, he secured a commission in the Montreal light infantry.

Mr. Campbell is a member of the Board of Trustees of Toronto University and Upper Canada College, and an enthusiastic supporter of educational progress. He is also highly distinguished in the Masonic fraternity, having held more than one high office in St. Paul's Lodge, Montreal.

In religious circles he is a strong Anglican, and is a member of both the Diocesan and Provincial Synods, and in the sessions of these bodies there is no voice which carries more weight than his, nor any more active in the advocacy of wise and needful reforms. He is one of the founders of the Church Association organized for the purpose of checking ritualism, and at all times takes a lively interest in Wycliffe College.

He has three sons and three daughters. The eldest son is a barrister in Toronto, the second a physician, the third is manager of the Muskoka mills. All are graduates of Toronto University.

#### MR. J. B. MILLER.

MR. J. B. Miller, president of the Parry Sound Lumber Co., and secretary of the Ontario Lumbermen's Association, and son of J. C. Miller, M.P.P., also a lumberman of extensive operations, was born at Leeds, in July 1852. The facts of his life are but few, and as little colored by romance as the man himself is by aught of pretension. He was educated at the Model School, Toronto, and at Upper Canada College in the same city, which latter institution he left in 1880 to take charge of his father's business, which failing health had compelled the latter to resign. Since that time he has been closely bent upon the affairs pertaining to their large limits. In 1883 he married Miss Hunter, daughter of Rola, Hunter, of Hunter, Rose & Co., Toronto, making his home since that time in Parry Sound during the summer season, and at the Queen's Hotel, Toronto, in winter.

Mr. Miller has not confined his attention to the production of lumber, but has speculated largely in timber lands in the dis-

Toronto, being president of the Edwards Oil Burner Co., the Rotary Steam Shovel Co., and the Toronto Brick Co., and is also interested in the Polson Iron Works Co.

During the summer, he with his family and friends, voyage around in his steam yacht exploring the picturesque regions along the granite bound streams of Muskoka and Parry Sound. Being



MR. J. B. MILLER.

an amateur photographer of no mean ability, he has many trophies of these districts.

#### TRADE NOTES.

Gooderham & Worts have just placed a 60 h. p. Wheelock engine and boiler in their new elevator in this city, from the works of Goldie & McCulloch.

Ross, passed into the hands of his son, D. R. Ross. The latter had managed the mill on his own account for several years previous to that event, and in the year 1881 he leased the "Scotia" mill property, running both mills for four years. Having purchased the latter mill, he converted it into an oatmeal mill also, and since that time has conducted both with eminent success.

Owing to the depression in the trade during the last year or two, caused mainly by overproduction, an association was formed for the protection of the interests of oatmeal millers, and Mr. Ross became secretary. In that position he identified himself with every plan for the benefit of the trade. Besides this, Mr. Ross has held a number of offices of trust and honor in his own mun-



MR. D. R. ROSS.

capacity, having been elected councillor five successive years for the town of Embro.

He married in 1875 a daughter of the late James Munro, proprietor of the "Spring Creek" mill, near Embro.

Mr. Ross is an ardent believer in the efficacy of better trade relations with our neighbors of the Republic to relieve our trade depression, as well as in the grand future in store for Canada.

# THE BAG AND HESSIAN FACTORY OF CANADA.

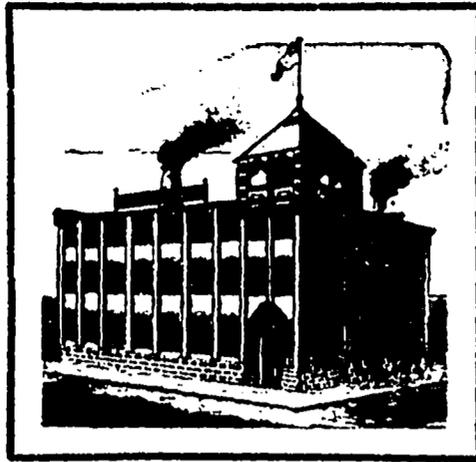
## BAGS

Of every quality and size.

**THE**  
**OLDEST, MOST COMPLETE AND BEST EQUIPPED**

Bag Factory in the Dominion.

WE MAKE **THIRTY THOUSAND BAGS**  
EVERY DAY



A Special Feature is the  
**MACHINERY FOR MANUFACTURING HESSIAN CLOTH.**  
Every quality and every width can be  
supplied same day as ordered.

### BAG PRINTING IN COLOURS

We are now printing 5,000 to 10,000 Bags  
daily, and are turning out the **BEST WORK** in  
the country, at the **LOWEST PRICES.**

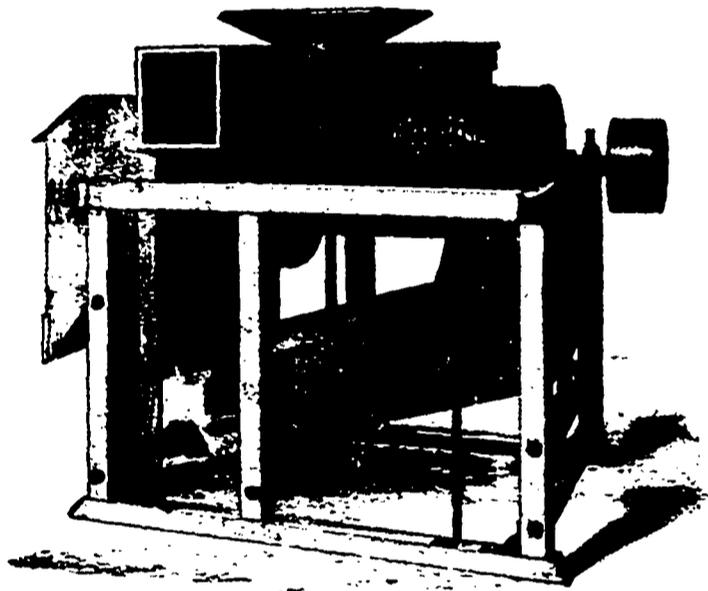
WRITE FOR SAMPLES OF OUR  
**BAG PRINTING IN COLOURS.**

## THE CANADA JUTE COMPANY, Limited,

ONTARIO AGENTS: MESSRS. STARK BROTHERS,  
62 Front Street East, TORONTO.

15, 17, 19 and 21 St. Martin St. - MONTREAL.

# LIDLAW'S IMPROVED GRAIN CLEANER



The above machine is **UNSURPASSED** for thoroughly cleaning wheat, oats,  
barley and other grain. One of these machines lately put into Mr.  
Thomson's oatmeal mill at Seaforth, Ont., is doing most  
satisfactory work. Read a few of many testimonials  
as to the results given by this machine:

MESSRS. A. LAIDLAW & CO., Toronto.

Gentlemen,—Your favor received, and with regard to the Barley Cleaners you are manufacturing, we have much pleasure in testifying to their general excellence. To the best of our knowledge they have given the greatest possible satisfaction in every case, both to ourselves and to others who have had occasion to make use of them.

Yours truly,

Toronto, April 14th, 1888.

W. D. MATTHEWS & CO.

Shelburne, Ont., Jan. 23, 1882.

MESSRS. A. LAIDLAW & CO., Parkdale.

Gentlemen,—Yours of the 21st received and noted. We have found your Barley Cleaner (No. 1, capacity 200 bushels per hour) a first-class machine, and have no hesitation in stating that it will more than pay for itself in a single season, especially in light or badly sown barley. We cleaned all the barley we handled this season, and find that the average increase in the weight was two pounds per bushel, and the average waste (light grain, dirt, &c.) about one bushel in seventy-five. It increased the value of our barley three to five cents per bushel.

Yours truly,

Port Erie, Jan. 16th, 1888.

MESSRS. A. LAIDLAW & CO., Parkdale.

Dear Sirs,—We are more than pleased with the Barley Cleaner you put in our elevator. We would not part with it for three times its cost; in fact could not do without it. We can safely recommend it to any one requiring a cleaner, and feel certain it will give entire satisfaction.

Faithfully yours,

H. & E. HAXTER.

It will pay millers, owners of elevators, and others, to examine the  
merits of this machine when visiting the Industrial Exhibition.

Send for circular and testimonials.

**A. LAIDLAW & CO. - PARKDALE, ONT.**



### FOR SALE.

A Roller Flour Mill, 125 barrels capacity, with all the latest improved machinery, situated in one of the best wheat growing districts in Ontario. Excellent shipping facilities. Enquire Mechanical and Milling News, Toronto.

### FOR SALE.

**1 2-Roll Allis Mill,**  
Rolls 9 x 18; 1st Break.  
MACHINE NEARLY NEW; ROLLS PERFECTLY NEW. WILL BE SOLD CHEAP.  
MILLER BROS. & MITCHELL,  
MONTREAL, - QUEBEC.

### THE "DANDY."



Time saved and profanity sensibly diminished in every bill, note and form where the "DANDY" PATENT RAGHOLDER goes into use. Suits any kind of bill, without bother of adjusting. It will last a lifetime and only costs 25 cents. Sold through agents. Sample (free by express or mail) on receipt of price.

**C. W. ALLEN & CO.**

"World" Building,

MELINDA ST. - TORONTO

WHOLESALE AGENTS—For the Province of Quebec, Wm. Erving & Co., 2000 Merchants, Montreal; for the Northwest, J. H. Ashdown, Winnipeg; for the Maritime Provinces, H. F. Coombs, St. John, N. S.

### W. Stahlschmidt & Co.

MANUFACTURERS OF

Office, § School,



Church and Lodge  
**FURNITURE**

Preston, - Ontario.

SEND FOR CATALOGUE.

**GEO. F. BOSTWICK,**

Representative,

24 Front Street West, Toronto.

See our exhibit in the Annex at the Industrial Exhibition.

**ROBIN & SABLER**

Manufacturers of

**Leather**

**Belting**

2518, 2520 and 2522  
Notre Dame St.

**MONTREAL.**



ALL OUR  
**BELTING**  
MADE WITH  
**SHORT LAPS**  
AND CUT FROM  
THE PORTION  
OF THE HIDE AS  
SHOWN WITHIN  
SOLID WHITE LINES

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[For the MECHANICAL AND MILLING NEWS.]  
**LUMBERING IN THE WEST.**

By D. WYLIE BUCHANAN.

**L**UMBERING in the great prairie country of Western Canada will hardly be considered a matter of great importance. Indeed, the subject of lumbering seems incompatible with the word "prairie." Is not this prairie country, as the word implies, a vast meadow? Such no doubt is the popular idea with many who are not intimately acquainted with the country. They will hardly be able to associate the words "lumbering" and "prairie" together, unless it be to wonder whence comes the supply of lumber, and timber, and wood, fuel necessary for the use of the inhabitants of the region. True, there are many square miles of country in the west which are utterly destitute of trees, or anything in the nature of a tree, larger than a prairie rose bush. Even hundreds of miles of country, particularly in the southern and central portions of the Territories, may be travelled over without seeing a single tree, but there are nevertheless important and valuable timber districts in other parts of the country. Over one-half the area of the province of Manitoba is wooded. The northern and eastern portions of the province are covered with a forest growth, whilst in the settled portions of the south there are timber areas of smaller extent, but from which considerable quantities of lumber for local purposes have been taken. Some of these wooded districts, however, furnish very little timber suitable for lumber, and the different varieties of timber are also limited. In Manitoba, spruce is by far the most important variety used for lumber, but limited quantities of poplar, oak and tamarac have also been sawn. The Lake Winnipeg timber region supplies the bulk of the spruce lumber, and west of lakes Manitoba and Winnipegosis, there are large areas of valuable spruce forests. Poplar grows in bluffs or patches, here and there in nearly all sections of the province, and is the principal timber in the settled portion of the province, or prairie section. It is a very poor wood for lumber, or for any other purpose for that matter, and when sawn into boards, manifests a strong tendency to double up. Tamarac is found in considerable quantities in some sections. The oak is not of a large variety, a good deal being scrub oak. Along the Assiniboine river some has been obtained for sawing. Birch, elm, cherry, cedar, Jack pine, and a variety of maple, known as the Red River maple, are also among the varieties of forest trees found in Manitoba, but not in quantities. The last named variety sometimes attains quite a size. It is also the tree most generally used for ornamental purposes.

The timber resource, of the Territory of Assiniboina, west of Manitoba, are not so great as in the province named. In the northeastern portion there are some timber areas. The Moose Mountain, Cypress Hills, Touchwood Hills and Wood Mountain districts afford some timber areas, and also along some of the streams some timber may be had. Saw mills are established at Moose Mountain and Cypress Hills, which supply lumber for local purposes.

The Territory of Alberta is well supplied with timber. All along the Rocky Mountains, which bound the territory on the west and northwest, there is abundance of timber, and also on the rivers in the northwest part of the territory timber is found to a considerable extent. Calgary, in this territory is the centre of quite a lumber industry. The Bow River Lumber Co., the Eau Claire Lumber Co., and the Calgary Lumber Co., all have their headquarters here, and have mills along the Bow river. The logs are floated down the river to the mills, from the timber limits in the mountains and foot hills. There is also one saw mill each at Macleod and Lethbridge, the logs being brought down the river from the foothills. North of Calgary, in the Red Deer country, there is a valuable timber area, and a small saw mill has been located in there for a few years, which supplies the settlement in the vicinity. Lumber is also sawn at Edmonton, on the North Saskatchewan river, in the northern part of the Territory.

A large portion of the Territory of Saskatchewan is wooded. The Saskatchewan river runs through the centre of this vast territory from west to east, and along the river is more or less timber. The country north of the river is but imperfectly known, but is generally described as wooded. The eastern portion of the territory, south of the river, is also well supplied with timber. At Prince Albert and Battleford, the only two settlements of importance in the territory, are located saw mills.

So much by way of a general review of the situation. It may now be of interest to enter into more minute details of the growth of lumbering in Manitoba. Settlement had existed in the Red River country many

years previous to the introduction of sawing machinery into the country. The houses of the early settlers were built of logs, with thatched roofs, and any lumber and timber used was sawn by hand, certainly a very tedious operation, but nevertheless considerable quantities of timber and lumber were prepared in this way by the Hudsons' Bay Company and others.

As the early history of the country centers around Fort Garry, (Winnipeg,) so also does the early history of the lumbering industry in the province. The first account we have of the introduction of saw mill machinery was in the year 1856. Machinery for a combined saw and grist mill was purchased in Chicago, and brought into the country in the year named. The motive power for the engine consisted of a 25 horse-power engine. The machinery was transported across the country from Chicago to the Mississippi river, where it was loaded upon steamers and taken up the river to St. Paul, the head of navigation on the river. At St. Paul the machinery was loaded upon wagons and drawn by oxen across to the head water of the Red River, where it was placed upon flat boats, built for the purpose, and floated down to Winnipeg. On arriving at Winnipeg the flat boats were broken up and the lumber of which they were composed, sold in the settlement. This was the first lumber imported into the settlement, and was the commencement of what afterwards grew to a very important trade. On the arrival of the machinery at Winnipeg the work of setting up the pioneer mill was commenced, but owing to the lack of knowledge on the part of the operators, considerable difficulty was experienced in making the machinery work. Finally, however, the mill was got into working order, and for a time did good service in supplying the settlement with both flour and lumber. The mill occupied a site within the corporation limits of the present city of Winnipeg, in the vicinity of Drewery's brewery, and was operated by a company of settlers. The investment, it is said, did not prove profitable to the proprietors, though there was always plenty of work to be done, and the mill was frequently kept in operation night and day. The logs sawn were the native timbers of the country, growing in the Winnipeg district, and consisting of poplar, oak, tamarac and spruce. The mill was burned in 1862, and so ended the first milling enterprise in the settlement.

About the time of destruction of the pioneer mill another mill was established by Andrew McDermot. This was also a combined saw and grist mill, and was located in the vicinity of the Dick & Banning and Jarvis & Berridge mills now standing in Winnipeg. Like its predecessor this mill was also burned down, after serving the settlement for about ten years.

About this time the flat boat trade was commencing to assume some importance, and lumber was coming in from Minnesota in this way. It was also always customary to sell the material of which the flat boats were composed for lumber, as the boats could not be taken back up stream to advantage. Lumbering on the upper Mississippi river had by this time been developed to a considerable extent, and lumber was coming into Manitoba from that quarter from mills located at Minneapolis, Braimard and other points on the Mississippi river. With the construction of the Northern Pacific railway the lumber was carried to Moosehead, and thence brought down the Red River to Winnipeg. W. J. McAulay, of St. Paul, was the first to go into this business extensively. In 1872 he brought the first stock of lumber of importance into the settlement, which was rafted down the river as described. During the same summer McAulay & Co. commenced the erection of a saw mill in Winnipeg. This mill was sold to Jarvis & Berridge in 1879, but shortly after was blown up and destroyed. It had a capacity of 20,000 to 25,000 feet per day. A new mill was built, and a company formed, called the Winnipeg Lumber Co., which succeeded Jarvis & Berridge. The new company came into business at a critical time, when the lumber business was going down with the collapse of the "boom." The company did not prove a success, and the property soon passed into the hands of the banks which had advanced money to the projectors. The mill stands at the present time with its machinery complete, and nearly new, having only been operated for a short time during its early existence. Since then it has been standing idle. It is the best mill ever established in Winnipeg, and has a capacity of about 100,000 feet daily, with battery of five boilers, and 250 to 300 horse-power.

The present lumber firm of Dick, Banning & Co. also date the commencement of their operations here from the year 1882. Mr. Dick, who had visited the country during the previous year to look over the situation, returned from Ontario in 1882, with machinery for a saw mill. The machinery arrived by flat boat from Moose-

head, and the cost of transportation from St. Paul was nearly \$1,500. The mill was established in Winnipeg, near the Jarvis & Berridge mill, and the building remains at the present day. Mr. Dick formed a partnership with the late Mr. W. W. Banning, (who died in 1885), about the time his mill was completed. The mill was operated up to 1881, when the firm bought out a mill which had been established at Keewatin, Lake of the Woods, by W. J. McAulay. The Winnipeg mill was then closed and the machinery moved to Keewatin, and a portion was sold to establish a mill in the Rocky Mountains. The timber sawn at the Winnipeg mill was such as the district afforded. The firm also operated a mill on Lake Winnipeg for a while, where they built a mill in 1878, but sold out a few years later. This firm imported lumber and building material from Minneapolis and other points largely, especially during the "boom" days, during which time it was almost impossible to keep up with the demand. In 1882 the firm brought in 10,000,000 feet, and paid nearly \$150,000 in freight that year. Those were the halcyon days for the lumber trade in Winnipeg, when purchasers stood on guard, waiting for a car of lumber to arrive, when it would be immediately gobbled up, regardless of price, and always for cash down. The trade, however, made up for it during the following years, when stocks were greatly in excess of demands, and prices were cut down to unprofitable figures. Before the "boom" period prices for common lumber ranged about \$25 per M. During the "boom" prices went up to \$30 and \$35 per M. for common lumber. Now the quotation is from \$14 to \$16 per M., and prices are higher this season than they have been for several years back. Messrs. Dick, Banning & Co. now confine their operations mainly to manufacturing on the Lake of the Woods.

In 1879 Hugh Sutherland built a mill on the Red River, near Winnipeg, with a capacity of about 20,000 feet daily. This mill was sold to the Winnipeg Lumber Co., and afterwards moved away. In 1882, J. R. Sutherland built a mill at St. Boniface, across the river from Winnipeg. The mill was a very good one, and had a capacity of about 70,000 feet. It was a double circular mill. This mill was destroyed by fire in 1884. In 1882, Mr. D. E. Sprague built a mill in Winnipeg, single circular, with a capacity of 40,000 feet in ten hours. This mill is the only one which has been in operation here of late years. It is running this season, and has been operated every year since established except during last season. The logs sawn at this mill come from the Red Lake district of Minnesota, down the Red River. The timber is pine and is the only timber now procurable. There is no timber in Manitoba tributary to Winnipeg now. On the Rosseau river, a tributary of the Red River, there formerly was a pine country, but this is now about exhausted.

This sketch covers briefly the main points connected with lumbering at Winnipeg. With the construction of the Canadian Pacific railway eastward from Winnipeg to the Lake of the Woods, the establishment of mills commenced on the Lake. John Mather was the first to establish a mill there, followed by W. J. McAulay. There are now six mills at the Lake, five of which are in operation this summer. The Lake of the Woods mills now supply Manitoba and the prairie country as far west as Regina with pine lumber, and this season the mills are enjoying a very active trade. No lumber is now being imported from the United States, nor has there been for four or five years back. The country west of Regina is supplied with lumber from the mills at Calgary and in the Rocky Mountains. In Manitoba quite a lumbering industry has sprung up on Lake Winnipeg, where the timber is mostly spruce, with some tamarac. The largest operators on Lake Winnipeg are the Selkirk Lumber Co., of Winnipeg. About seven mills are operating on this lake, but several are small affairs, and the total cut for the season will be less than 10,000,000 feet. The Lake Winnipeg mills supply the country with the rougher lumber used. The lumber is brought to Selkirk by water, in steamers and barges, and thence distributed by the C. P. railway throughout the province.

In addition to these two main sources of lumber supply—the Lake of the Woods and Lake Winnipeg—there are local mills at a number of points throughout Manitoba. In Southern Manitoba there are several mills operating on local timber areas. In Northern Manitoba there are also mills on nearly all the streams running southward and westward from the Riding Mountain, where an extensive spruce timber country exists. Mills at Brandon, Birtle, Millwood, Minnedosa, etc., are supplied from the Riding Mountain region. The Riding Mountain forest is really a continuation of the Lake Winnipeg spruce country. This forest stretches across the northern portion of the province. A large portion of this vast spruce forest is tributary to lakes Manitoba and Winnipegosis, and in time a large lumbering industry will be done on these lakes.

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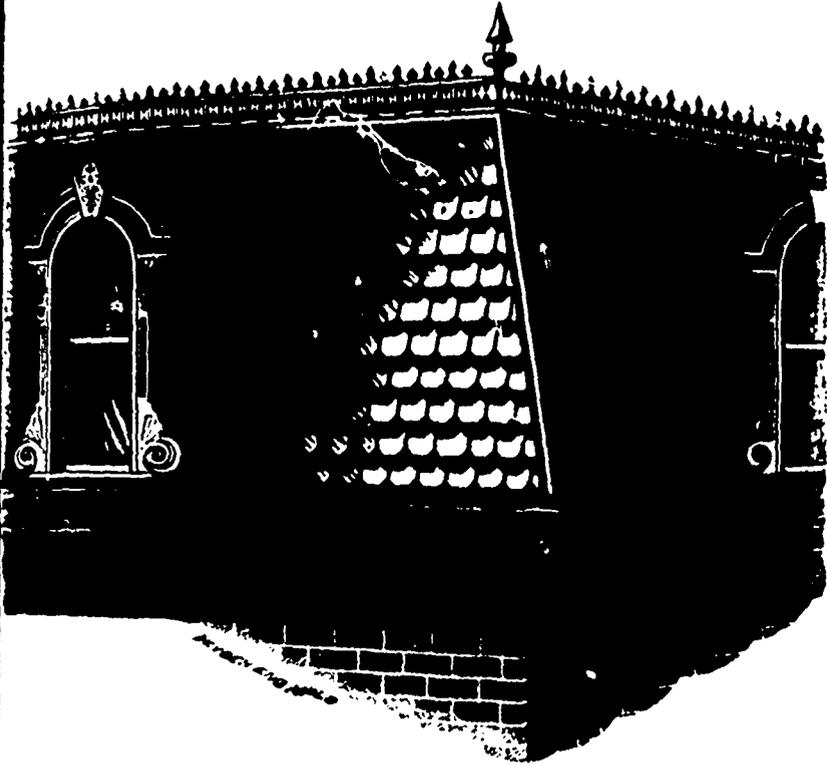
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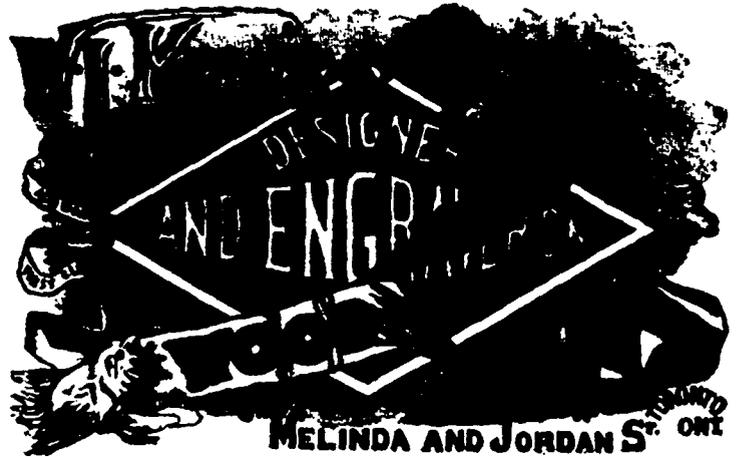
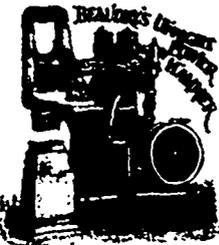
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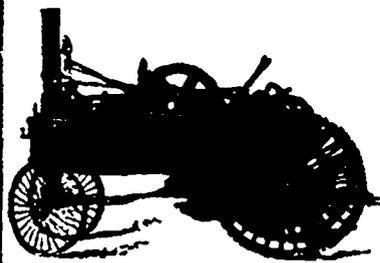
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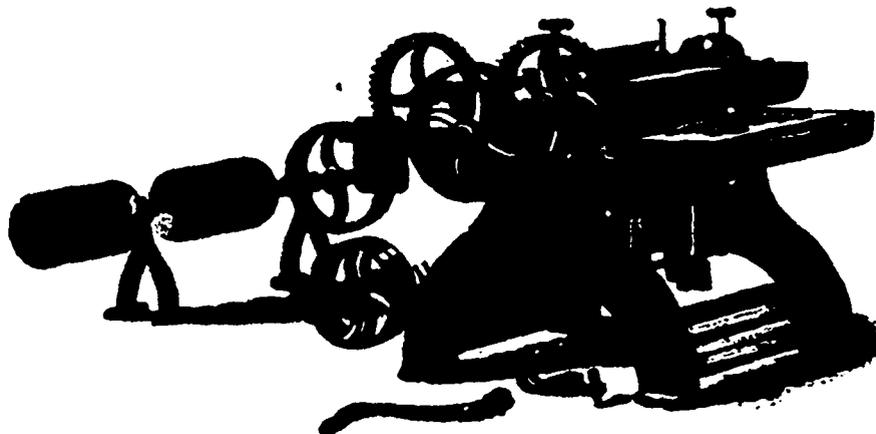
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**IMPROVED WHELOCK AUTOMATIC CUT-OFF ENGINE.**

THE illustrations on this page show the cylinder and valve system of a new type of engine manufactured by Messrs. Goldie & McCulloch, of Galt, Ont. The general arrangement of the engines follows the American type, the main bed being of trunk girder pattern, and so arranged that the chief bulk of metal lies in the direct line of strain between the cylinder and crank shaft bearing. In these engines the cut-off valves are placed as close as possible to the main valves, an arrangement by which large clearance spaces, long ports and consequent waste of steam are entirely obviated. The chief features of the cut-off gear are its great simplicity, the fewness of its moving parts, the small amount of power absorbed in working it, and therefore the absolute control which the governor has over the slightest variation in the load on the engine, and the economy of steam thereby obtained. As distinguished from most of the automatic cut-off engines on the market, the Wheelock engine has only one eccentric, from which the main steam and cut-off valves are actuated, the wrist plate action which exists in the Corliss engine being obtained by a very simple and ingenious arrangement. One of the chief features in the construction of this cut-off gear, and the great dissimilarity to ordinary practice, is the suspension of the valves on hardened steel guides and bushes, as shown in the accompanying cuts. The valves are flat slide, with multiplicity of opening and extraordinary area, with minimum of movement. (See Fig. 1.) By the use of a knuckle-joint movement very slight lap is needed, and almost instantaneous opening and closing are secured with great ease of action under the most extraordinary pressure. The separate shells or seats show this knuckle-joint movement. (See Figs. 2 and 3.)

This system can be applied to any engine, especially the Corliss type of anybody's make, and the manufacturers guarantee positive advantage by its use.

These valves are fitted to separate seats that are driven into the holes in the cylinder a little tapering, and no bonnets are used. All the work on them is completed on the work-bench and when in use they bring no wear on the cylinder.

The system is especially adapted to high speed. The valves are perfectly tight, with no necessity for balancing. By the peculiar arrangement of the valve-movement the cut-off is very effective and positive in its action, as the cut-off valve has but slight movement after closing, while the knuckle-joint allows of continued movement of the mechanism without moving the valve.

Messrs. Goldie & McCulloch commenced the manufacture of the Wheelock engine about five years ago, and eighteen months ago introduced the improved valve mechanism shown herewith, and which has increased very much the efficiency and popularity of the engine. Two hundred of these engines are in operation in Canada, upwards of thirty being located in the city of Toronto.

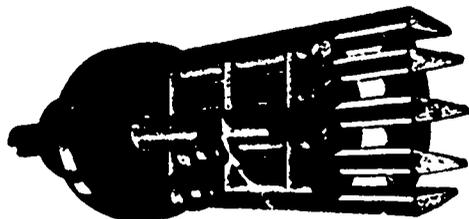


FIG. 1.

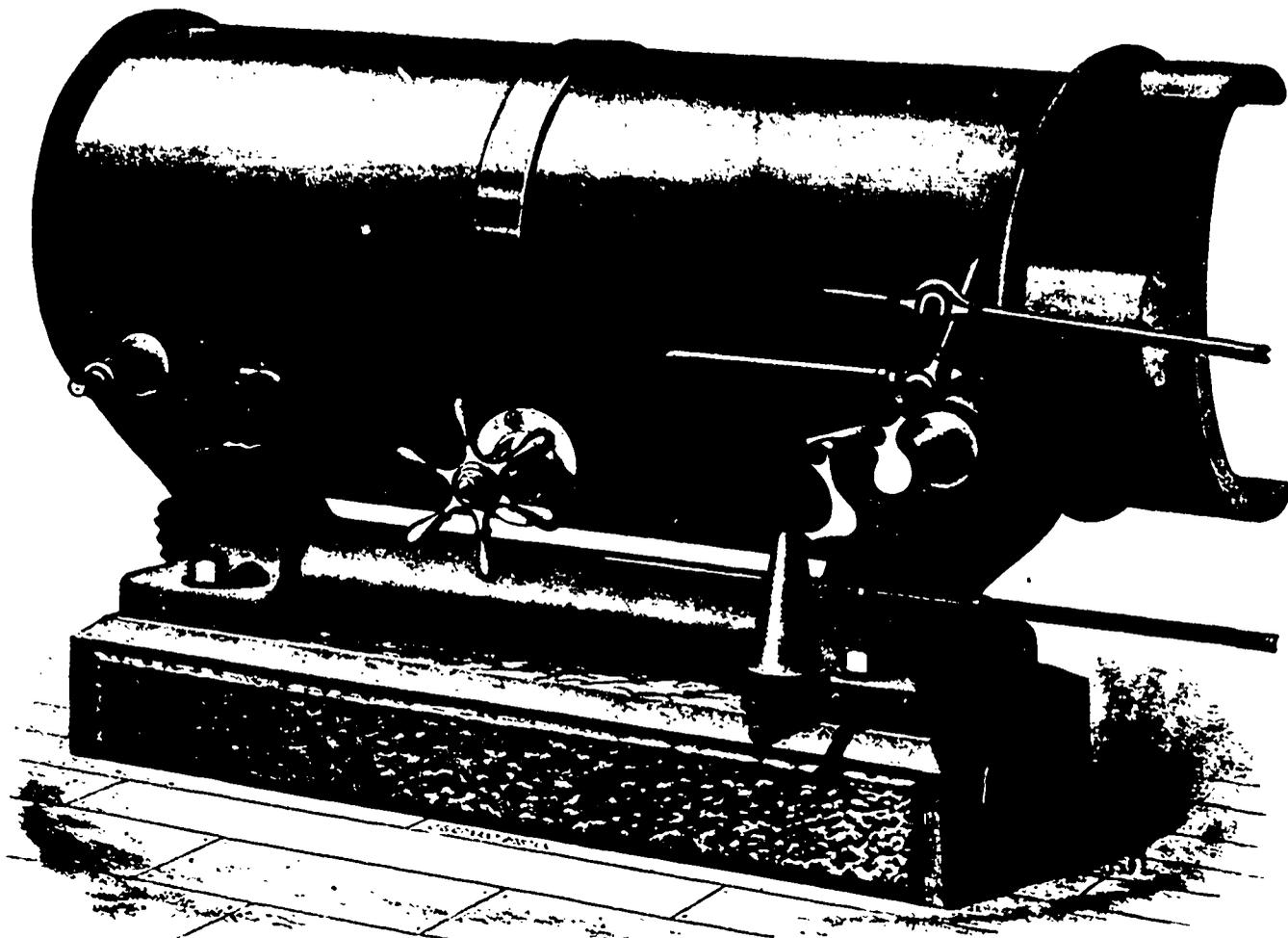
ago introduced the improved valve mechanism shown herewith, and which has increased very much the efficiency and popularity of the engine. Two hundred of these engines are in operation in Canada, upwards of thirty being located in the city of Toronto.

[For the MECHANICAL AND MILLING NEWS.]  
**"ORDINARY INTELLIGENCE."**

By "AUTOMATIC CUT-OFF."

IN looking at the many kinds of engines now being made, and the very elaborate circulars and pamphlets which are being sent out to the steam user, I find the above words, "ordinary intelligence," used in nearly all of the engine manufacturers' advertisements. Mr. A builds a simple, durable and effective cut-off engine, and proclaims to the world that "ordinary intelligence can run it," no high priced engineer required. Mr. B builds the old reliable Corliss engine, and talks about correct workmanship, the accessibility of the parts, and the engine requiring little or no attention; "a man of ordinary intelligence can run it for years without any expense

whatever for repairs." Mr. B informs his customers that they do not need a first-class engineer; a common, every day "plug" will do, because if the engine does happen to go wrong he will send a man from the shop to fix it. See? Mr. C also has the latest improved automatic cut-off; no rock valve; this valve is slide, and can't be beat. But Mr. D has the very best: it is an automatic cut-off with iron slide valves; no wear and tear, steel pins, cams, rollers, &c., &c. None of these engines require an engineer,—just any man of "ordinary intelligence." Then comes the high speed engine, high class automatic cut-off, solid eyes, hardened and ground to fit perfectly, hardened steel pins, no keys or set-



screws for "ordinary intelligence" to tighten up just a little too much and get hot; automatic oil feeds. Everything about this engine is so fine it needs very little if any attention, even from "ordinary intelligence."

The buyer when he sees all this thinks he has found a bonanza.

Hold on, here's another automatic cut-off, self-contained, a big engine in a small space, no oiling required, no attention, will run continuously without any attention whatever; cannot get out of order. Buyer says, hello, here is the millennium in steam engineering, and not one of the above engines requires an engineer.

No matter how many tappets, latches, hooks, springs, ash pots, cams or gears they may have, all of this, yes, and the fine boilers and the heating apparatus, can all be managed perfectly by a man of "ordinary intelligence"—not necessarily an engineer. All this kind of "guff" makes an engineer weary. Let us look at some of the results. The writer knew of a case where one of the last engines was put in—a good job, well built and set up; case of engine filled with oil and water, and everything worked beautifully for a few days. The whole thing pronounced a success; no trouble; anybody could run it. Thug, thug, bang, bang. Hello! "what's that? engine stopped? Well, we will send to the shop for a man." Machinist arrives with a monkey wrench and a pair of old greasy overalls and investigates. Finds case empty of oil and water, and a dilapidated pile of broken governor and cranks. Result, four days shut down for factory employing 200 hands. Cause, too much "ordinary intelligence."

Another instance! Some years ago, having to wait for a train in one of our small western villages I saw two

mills near the station, one a saw mill, the other a grist mill. The grist mill was fired with refuse fuel from the saw mill. The proprietor told me he had a first-class mill and his engine was one of the new kind, and had been running about one year. I went into the engine room, and could hardly tell what kind of an engine it was for escaping steam, but I was sure from the thumping noise that there was something there. I then went into the boiler house, and saw a boiler that was rather dirty. The eng—"no ordinary intelligence" man was just putting on a fire, and doing it with inch board edgings 12 feet long. Now that man had a very good streak of fire under that boiler. I looked at the steam gauge, it registered 80 lbs. and the safety valve was the safest thing I ever saw—it had an old log truck wheel, a piece of a dog chain and a scraper hanging on to the lever, and the scraper was wedged between the lever and a rafter of the roof. I remarked to the man that I thought he had plenty of weight on his safety valve, and the reply was that "the blamed thing leaks ever so little while." At about this time, the miller put his head out of a window and yelled "shut down, George!" George groped his way through the steam to the throttle and stopped the engine, but paid no attention to the boiler; drafts full on, 12 feet of fire under her, and no escape for the steam! This rather startled me, and I took a walk. That engine stood still about twelve minutes. When they started again, I returned, and asked the man: Did you get her hot that time, George? He said, "you bet! I had 130 on her then." I told him he would do that once too often, and go up one of these days. He said: "what are you talking about mister; this boiler ain't no slouch. She was built in Detroit, and every one of them



FIG. 2.

sheets is marked 66,000 lbs. I would go to sleep on her with 200 lbs. pressure." And this man was supposed to have "ordinary intelligence."

The trouble is to arrive at what these words mean. The man who could fill the bill for the engine builder might be looked upon as a first-class engineer by the steam user. If the engine builder would advise the purchaser of every engine he



FIG. 3.

sells to get a good engineer, the buyer would be better satisfied and be money in pocket, and the engine builder would be saved much litigation and annoyance, and the "ordinary intelligence" racket would die a natural death.

The Canadian Rubber Company, of Montreal, recently secured from the Canadian Pacific Railway the order for rubber tubing for their large elevator at Fort William, consisting of 4,095 feet no. 10, 6 ply, 341 feet 5 1/2 in. 7 ply. This is the largest order ever given for one elevator in the country.

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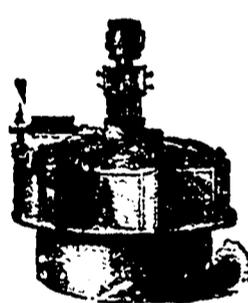
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Will grind with Rolls over 2 bbls. tabled H. P.

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W. SMITH, Manager.

## PRIDE AND PRIDE.

BY JANE G. AUSTIN.

**D**O you know the Chateaugay Woods—those vast tracts of sombre hemlock stretching for leagues over the Adirondack hills and vales, and yet within so few hours travel from New York, that centre of all that is furthest from silent or primeval or innocent?

It was a bright September morning, and woods and sky and air, and the treacherous brook tumbling down the hill-side toward the saw mill at the foot, were all at their freshest and most charming; so was the figure of the young girl who, mounted upon a fiery little Cuban horse, controlled him easily with one hand as she paused just in the edge of the woods on the brow of the hill, and contemplated the scene below with eager, sensuous delight.

A handsome creature she was, this young Sybarite, and harmonious with the scene in her intense vitality, freshness and eager appreciation; tall and lissome, but with promise of an imperial presence in later life, with a satin-smooth dusky skin, a rare rich crimson tinting the cheeks and burning on the lips, straight dark brows, heavy enough to make their frown significant, and great eyes just as bright and just as brown as the brook when it flashes out from among the hemlock roots into the sunshine; a head modelled after the Greek, with masses of wavy hair drawn back from the low forehead, leaving the tiny ends exposed, and knotted at the nape of the neck in a great soft coil, on which the riding-hat, with its scarlet tanager's breast and wing, sat like a crown.

Half a mile down the steep white road, Mary Murgatroyd checked her horse at the edge of the platform of a saw-mill. The whole interior was visible through the great double doors, making all one end of the building; several men were at work, and overlooking them a powerful young fellow, his loose red blouse and blue trousers, upheld by a broad leather belt, showing to perfection such a figure as hemlock forests, mountains, and plenty of physical exercise alone can develop. He looked round at sound of the pony's feet, and came slowly forward to greet his employer's daughter: for all those hills and vales and forests, the brook and the mill, belonged to Stephen Murgatroyd, who, partly from a love of nature, oddly surviving thirty years in Wall Street, partly as knowing that the master's eye is wholesome for any business, had built a sort of sylvan lodge here in the Chateaugay, whither he was fond of resorting for a few days at a time, and whither Mary in these later years had grown fond of accompanying him. And Leon Leduc, who was Canadian by name, Saxon by nature and looks, in the master's absence had charge of everything, and managed better than the master could for himself. When nobody else occupied the sylvan lodge, Leduc made it his home, and if Mr. Murgatroyd came up alone, the two kept house together with mutual satisfaction, the younger man generally giving the elder some new bit of intelligence out of the scientific or political works of the day, or commenting on the latest travels or newest whims of philosophy, with a careless ease, showing wide reading and a prodigious memory. But when Mary came, generally bringing one or two companions of her own world with her, Leon Leduc retired to one of the log cabins built for the mill-hands, wood-choppers, log-drivers, and other employes of the vast estate, where he delighted and, with no pretence or self-consciousness, instructed as large an audience as could get near him.

"Good-morning, Mr. Leduc. I am going to rest in the shade a little while. I have ridden a long way," said Mary, giving the rein to Leon, who held it firmly, so that the rider's feet were within an inch of the platform, and did not offer any further help in dismounting, or even look to see how gracefully it was accomplished.

"You may let one of the men loosen Moro's girths, if you please, and take out the bit. It freshens him up wonderfully."

Without reply the overseer performed the suggested duty himself, Miss Murgatroyd crossing the platform and looking down at the brook flashing at the foot of the steep bank. Moro comfortably established, Leduc hesitated, glanced into the mill, glanced at the unconscious maiden, her shapely back turned square upon him, and reluctantly approached her.

"Will you go into the office and sit down Miss Murgatroyd?"

"Nobody has such original ideas as you Mr. Leduc. To fancy my desiring on this heavenly morning to shut myself up in that horrible, stuffy little office, to amuse myself with contemplating the inky desk and red backed ledger and cash-book! No, I intend getting down this bank and gathering those harebells at the bottom, or are they gentians?"

"Gentians, I believe. I shall be happy to gather them for you myself, if you will allow me. The bank is very steep and slippery, and the pool just here very deep."

The offer was courteous, the manner just what befitted a young man in woollen shirt and trousers, hard hands and sun-burned neck, speaking to his employer's daughter. Why then did the girl's smile grow so cruelly proud as she replied:

"By no means, Mr. Leduc. I could not think of taking you from your duties. Pray don't let me interrupt you any longer."

A swarthy flush rose under the sunburn of the overseer's face, and with a silent bow he turned away, walked as far as the first sharp-toothed saw gnawing its way into the heart of the great hemlock bole, stood there a moment, then turned and strode back. Mary was half-way down the bank, clinging to a shrub with one hand, and with the other reaching toward the gentians.

"My time belongs to Mr. Murgatroyd, as you suggest, Miss Murgatroyd," said a calm voice above her, "but I think it will be as faithfully spent in keeping you out of danger as in watching the saws. Please give me your hand and let me help you up the bank, and then I will get the flowers."

"By that sin fell the angels," and as they were falling one of them may have looked very like the face Mary Murgatroyd turned up toward the man kneeling on the edge of the bank and reaching down his hand to her, so proud, cruel and repellent.

"Really, Mr. Leduc, I think you had better keep to the work papa set you at. He never likes people disregarding his orders."

"And you cannot imagine a law higher than Mr. Murgatroyd's orders or Miss Murgatroyd's pleasure!" said the young man, his face turning lividly pale, then flushing as if it had received a blow. A bitter little laugh replied, and springing to his feet, he moved away, but had not gone a dozen paces before a scream, a rustle, a splash, told their story, and kicking off his shoes and flinging down his hat, Leduc sprang to the top of the bank, marked the spot where the white gleam of a sinking face shone up through the swirling waters of the pool, and leaped in. Already the swift current was grappling with her: already the heavy riding-clothes were dragging her down like anchors, when his arms wound around her waist, and her swooning ears caught the strange words, "Oh, my darling, my life! you shall not die!"

After that nothing until the maiden recovered consciousness, lying upon the couch in the despised office, with two tawny, hard handed, kindly women about her.

"What is it?" stammered she, feebly: and one replied:

"Why, miss you fell in the pool, and Leduc he see you, and got you out, and sent on one of the hands hot-foot to the shanty for us, and we've been better'n half an hour bringing you to. I tell you, miss, 'twas a narrow escape."

"Leduc saved me?"

"Yes, indeed. Lucky he was round, for the current sucks awful strong in that pool, and if you hadn't been got out when you was, you'd 'a been over the dam, and the dear knows where by this time."

"Where is he?"

"He set off for your pa and a carriage as soon as you began to come to. Took your pony, he did, and I guess he'll be back 'fore long now. Hark! Seems as if I heard wheels, and that's your pa's voice sure-ly."

Yes, it was Mr. Murgatroyd, whom Leduc had met a short distance from his house. But having seen the father enter the room where his daughter lay, Leduc turned away, and briefly saying to one of the men that he must go home and change his clothes, left the mill not to return until its visitors had departed.

The principal architectural pretence of the sylvan lodge was a great square veranda, the ends closed in by vine-covered trellises, and furnished with a sofa-table, chairs and couches of rattan. Here on the evening of her accident Mary lay, beautiful in her pallor and her languor, the former enhanced by the vivid scarlet of the Indian shawl draped about her. Her father had driven to the station, some eight miles distant, to meet a party of friends proposing to spend some days at the lodge, and she was quite alone when up the path strode Leon Leduc's stalwart figure, an odd look of indecision, almost of defiance, upon his face. In his hand he carried a little basket covered with paper, and seeing Miss Murgatroyd upon the veranda, came straight toward her. A bright wave of color, perhaps a reflection from the Indian shawl, swept over the girl's dainty pallor, and half rising, she said, "Oh Leon, I am so glad to see you and thank you!"

"It was my duty, my hired service."

"Leon! how can you be so unkind as to recall my insults! I am so sorry for them."

His face softened at once, and smiling he said: "Do not remember anything but that I am glad to have served you, and that the bank is unsafe. At any rate, there will be no temptation for you there now, for I dug up the gentians."

"Mr. Leduc! to destroy the poor innocent flowers, as if it was their fault!"

"No, indeed, I could not have done such a thing. I went down to gather them for you, and then it seemed too bad to break them off, and I thought you might like to have them growing near you, so I took up the sod very carefully, and here they are."

"How lovely! how good of you!" And Mary, craning her neck forward, peeped into the basket, all crowded full of the sweet blue eyes, with their long fringes of eyelashes, but did not offer to take it into her hands, so that Leon, forced to remain close beside her, sank upon a camp-stool, the basket on his knees, and stole one long, ardent look at the lovely head and face so temptingly bent toward him.

"The darlings!" murmured the girl, putting out one long shapely hand and softly touching the flowers. "I do so hope they will live! Where shall I have them put?"

"Close by the channel that goes down from the well; they are used to plenty of water, you know," said Leon, who evidently had arranged it all. "I will take a spade and set them there now if you like, and you had better have them shaded for a day or two. Then in the winter I will throw something over them, so that they may not be destroyed, and next year they will welcome you to the woods."

"How thoughtful you are, Leon!" murmured Mary, softly. "Yes, put them out, but—wait a little first. Papa has gone to Downs to meet Mr. and Mrs. Pomroy; you will remember her as Miss Melton two years ago, and Mr. Melton her brother. They are coming to stay two or three days or a week. Are you sorry?"

"Sorry, Miss Murgatroyd? Why?"

"Because they will take all my time, and I shall not come to the mill or ride to the logging camp alone."

Leon was silent. A strange sweet smell was creeping over his senses. He clinched his hands until the nails bit into the palm, and the pain steadied him.

"We workmen will miss your visits, Miss Murgatroyd," said he, coldly. "But of course, when your friends are with you, we cannot expect to be noticed."

"Why do you talk like that, Leon?" exclaimed the girl, half sorrowfully, half indignantly, all wooingly. "You know very well no man in all the world, gentle or simple, has half the right to my attention that he has who saved my life. Leon, I have been a very supercilious, haughty, disagreeable girl, and especially toward you; but I am sorry now—indeed I am. Leon, I am not proud any more; I never will be proud to you again."

The words came in a whisper soft as a kiss, and the slender hand stole out again, the warm soft fingers trembling a little as if longing to be grasped by other fingers; but Leon Leduc's long brown hands only grasped the handle of the little basket until it crushed beneath his fingers and his head sank upon his breast, his eyes never turning toward those moist beseeching eyes so shyly waiting for them.

A whippoorwill in the neighboring wood uttered his melancholy cry once, twice, thrice, and as he ceased Leon Leduc slowly spoke: "I am glad for you if you are no longer proud, for pride is a terrible tyrant to the nature it rules. I am not so strong as you; I cannot give up my pride."

Then, with no mockery of leave-taking, he went away, and presently hearing the clink of a spade against stone, Mary knew that he was setting out the gentians.

"I will trample them under my feet in the morning," said she, in a voice strongly savoring of the pride she had abjured.

Next came the roll of wheels, and then gay, brilliant, overwhelming Louisa Pomroy, on her way from Newport to Saratoga, and her rich fool of a husband, and Harry Melton, handsome, high-bred, wealthy, and sworn admirer of Miss Murgatroyd.

They were to stay but a few days, and these days must be filled full of all sylvan pastimes and delights; so horses had been provided for all, and the very first morning a gay cavalcade rode into the woods to visit the logging camp deep in the heart of the forest.

"I haven't warned them that we were coming, and you will see the genuine camp life, Mrs. Pomroy," said Mr. Murgatroyd to the pretty bride, who tinkled out her baby laugh, and clasped her hands, exclaiming:

"Oh, how perfectly lovely! And we will eat some of their—what was that word, now?—oh, their slapiack,

and hominy, and pork, and things--won't we, Mary?"

"You may if you like, Lulu; it's not such a novelty to me," replied her friend, a little briefly, for she was listening to a very tender speech from Harry Melton, and wondering where Leon Leduc's work had taken him this morning.

As late would have it, it had taken him to the logging camp, and at the last turn of the road they came upon him, standing beside a heap of bark, and directing its recording after the fatal blow it had received from a falling tree.

"Fine-looking fellow that!" remarked Mr. Melton, putting his glass to his eye, and staring at Leduc just as he would have stared at a statue in a picture-gallery.

"Yes, the overseer," replied Mary, quite audibly. "A very useful person; papa quite trusts him with his affairs here in the woods."

"So hard to find anybody worth trusting nowadays; dishonest employees quite the rule, you know--an awful bore." And having stared sufficiently at the phenomenon thus presented to him, Mr. Melton turned his glass upon the giant hemlocks, too grand to be supercilious, that looked good-naturedly down at the pigmy staring up at them, and rustled a welcome. Mrs. Pomroy, who would have flirted with the old serpent just as surely as Eve did, had there been no other subject at hand, was meantime making eyes at Mr. Murgatroyd, and going into pretty raptures and wonderments over everything she saw. Such big trees! such dark foliage! such sharp axes! such smooth stumps! such fine-looking men! such picturesque and red shirts! such a lovely blue sky away, away up so high! And oh! what was that?

"A crow's nest, ma'am," replied one of the woodmen, for her cavalier had stepped aside to speak to a knot of choppers consulting over the best direction to fell a new tree.

"A crow's nest? Dear me! I wish I could have it! I will give anybody a dollar to bring it to me." And the childish beauty clapped her hands and glanced gleefully round at the rough admiring faces of the men.

"You are extravagant, Lu," remarked Mary, her slow haughty tones contrasting with the chattering treble of the other. "Any of the men would go if papa bade them. Leduc, can't you get that nest for the lady?"

"By having the tree cut down, Miss Murgatroyd," replied the overseer, fixing his eyes upon hers for a moment, then slowly turning them away. "These men, you will remember, are hired for definite labor, not as general servants. I will have a tree felled at once if Mr. Murgatroyd wishes."

"It seems to me your model overseer is a little insolent," said Melton, half aside; and she replied:

"Children and servants always put on airs before company."

Then they rode on, Mrs. Pomroy lingering to cast an irresistible glance into the eyes of the handsome overseer, as she said: "Have it cut down, please, and I will keep the nest to remember a brave proud man by."

"I don't think you will care to keep it when you see it," replied Leon, smiling briefly. "It is very big and very dirty."

It was after the loggers' dinner, at which the guests assisted as proposed, and just as they were mounting for their return home, that two men appeared, bearing between them from the forest the section of a hemlock-tree, with a mass of sticks, and hay, leaves, and filth built in and among the stumps of the severed branches. The overseer, handsome and smiling, led them forward, and said to Mrs. Pomroy as she stood with her brother and Miss Murgatroyd:

"This is the crow's nest, madam. You see it is hardly a pretty plaything for a lady."

"How curious!" exclaimed the beauty. And then she whispered to her friend: "Do give the man some money for me, dear. I am afraid to. Perhaps you are afraid too, though?"

"I!" exclaimed the proud girl, and taking out her porte-monnaie, she selected a bank-note, and stepping up to Leduc, tendered it saying, "Mrs. Pomroy wishes to give you this to divide among you."

If Louisa Pomroy had feigned a terror she did not feel a moment before, she now felt a genuine terror. She did not speak as she saw the color drop out of the sunburned face, and the eyes contract and blaze as they fastened, not upon her, but the woman close beside him. For a moment both stood silent and menacing, then raising his hand, Leduc lightly struck the fluttering paper with the back of his fingers in a gesture of superb contempt, and said:

"Give it to Mr. Murgatroyd, if you please; he sells his lumber; but these men and I don't sell ourselves."

"Splendid fellow," murmured Louisa Pomroy, and really felt what she expressed. Whatever Mary felt, she

said nothing, nor did she cast one glance toward the tall figure striding toward the wood; but as Harry Melton put her upon her horse, he noticed with surprise that her rich lips were white and shrunken.

The last day of Mrs. Pomroy's visit had arrived, and to several of the party assembled round the early breakfast-table at the lodge it was a day of anxiety and importance: to Harry Melton, for he had resolved that before the new-risen sun should set he would break through Miss Murgatroyd's subtle evasions and defences, and force her to give an honest answer to the question he had not yet been allowed to ask; to Mr. Murgatroyd, for he had, with considerable care, arranged a deer hunt for his guests on this last day, and could not be sure that the scouts sent out to discover and drive the deer within reach of amateur huntsmen would succeed in doing so; and to Miss Murgatroyd because--well, she could not have told why, except that all days since the one she fell into the mill-pool were to her days of anxiety and a hidden conflict, beginning to tell upon the outline of her peachy cheek and lissome figure.

"I hope those fellows have driven in some deer," muttered the host to his daughter, as everybody got to saddle in the crisp, lovely September morning, already tasting of October. "I sent Leduc last night to look after it, and if it's to be managed, he'll manage it; that's one consolation."

"I am glad there is one consolation somewhere," thought Mary, under her bright smile and nod. "I wish I could find it. Will Leduc come in sight I wonder?"

"Our last day, Miss Murgatroyd," said Harry Melton, significantly, as he ranged his horse alongside of hers, which immediately began to curvet and plunge dangerously.

"I beg your pardon, Mr. Melton, but Moro never will travel comfortably beside a strange horse. He is wretchedly broken, so far as society manners go. I must fall back a little."

"If you didn't worry his mouth with the curb, he would go pleasantly enough," retorted Melton, too bitter at perceiving the ruse to be quite polite, but reining his own horse back, and suffering his host to precede him.

The hunt was to be carried on canonically, that is with horses and dogs, so far as the lay of the country permitted, and if the deer would only obligingly keep to the numerous wood roads and open glades, or to the stretches of forest clear of undergrowth, everything might proceed in as orderly a fashion as in an English park; but unfortunately, besides the hemlocks, whose tall, straight bolls offer no obstacle to sight or progress, there are in the Chateaugay wide tracts of second growth, scrub oak, birch, maple and other deciduous trees, whose drooping branches and thick-set suckers, concealing numerous decayed logs, cavities where roots have been torn up, and heaps of wood rubbish, make a horse but a vain thing for safety, and deer-stalking the imperative substitute for hunting. If the deer, pursued through the open country, had sense enough to take to these thickets, of course his chance of escape is vastly increased, especially if he is lucky enough to cross one of the numerous little ponds abounding in this region, and so throw the hounds off the scent. Of the three fine bucks sighted and hunted by the Murgatroyd party, two were wily enough to seek this refuge, one being run down and killed in the open after a fine sharp burst of about four miles.

"We must dismount and take up positions at various points in the bush," announced Murgatroyd, breathlessly, as he cantered back from a little tour of inspection down a tangled wood road. "I have just seen Leduc; he says those two fellows are in this swamp somewhere, and he has sent round the men and hounds to drive them out on this side. I'll post you all at different points, and it'll be hard if some fellow don't get a shot. Mary, you and Mrs. Pomroy stay just here, and don't dismount. Melton, Pomroy, come with me."

The three men disappeared, and Mary fidgeted in her saddle awhile, then said: "Lu, I'm not going to sit here doing nothing. I will ride down the wood road as far as I can, and have some chance of seeing the sport." So restless Moro was released, and shot down the crooked path, his rider gaily bending to his glossy neck, to escape the branches that lashed her head and shoulders. Presently in a little open glade the road ended, and slowly pacing round its circle the maiden saw through the matted undergrowth the gleam of running water, and heard the babble of a brook. The long ride had made her thirsty, and slipping from the saddle she hitched the reins around a birch boll, and unhooking the little silver cup from her girdle, parted the undergrowth, and made her way through it for some rods, until on the banks of the little stream she stooped and

dipped her cup, while a voice from behind a neighboring tree gaily said,

"Give me to drink too, fair Rebecca!"

"Mr. Melton! How came you here!" exclaimed the girl, severe as Diana catching sight of Acteon. Acteon laughed.

"I think it is I who should ask. I was stationed here to wait for monsieur le cerf, who is likely to seek the water, and to come down that little path. By Jove!"

He seized his rifle and laid it to his shoulder. Mary sprang to the top of the bank and looked where he aimed. There, just bursting out from the thicket, and astounded at the human figures so suddenly presented, paused the stag in act to leap, motionless for one moment as a statue, head up, nostrils distended, eyes starting, the image of arrested motion, of passing thought, just one instant, but it was the instant too much, for in that moment the sharp crack of the rifle rang out, and the splendid creature, springing high in air, stumbled forward and fell, his proud head in the dust.

"By Jove, I've done for him!" exclaimed Melton, forgetting the presence of Mary in the lust of killing--perhaps the strongest passion in a strong man's nature. Flinging down his rifle and snatching the hunting knife from his belt, he sprang forward, his eyes glittering, his breath panting. The girl slowly followed, drawn by a horrible fascination, although already she would have given her own blood to save the life of that murdered creature, dying yet not dead, for, as Melton bent over him, knife in hand, the stag sprang to his feet, desperate in that reckless rage which makes these timid creatures so terrible when brought to bay; the man leaped back, but it only gave room for the fierce thrust of the stag's horn, which, missing its aim, slid along the ribs, crushing him to earth, but not wounding him. Uttering a wild cry of rage and pain, the creature, planting his fore feet upon the breast of his enemy, was just in the act of repeating the thrust, when, with a loud halloo, another man burst from the thicket and dashed across the interval; quick as thought the stag turned and darted upon the new opponent, who, unarmed as it seemed, met the blow, threw his arms around the neck of the stag, and fell with him to the earth, one mad struggling heap of arms, legs, heads, glaring eyeballs, and panting breath. But it was the death-throe of the wounded beast, and after a few moments he lay still.

Melton staggered to his feet; Leon Leduc lay still, his eyes dim, his lips white, blood oozing from his breast. Mary, rousing from her stunned horror, ran toward him, and dropping on her knees cried,

"You are hurt, you are killed, Leon!"

The white lips slowly smiled, more slowly whispered, "Yes, but the man you love is safe."

"The man I love! I love no man but you--you! And if you are too proud to love me back, I will go unmarried to my grave. Do you hear that, both of you?"

"Do you say it knowing what you say? Do you mean it, my queen, my darling?"

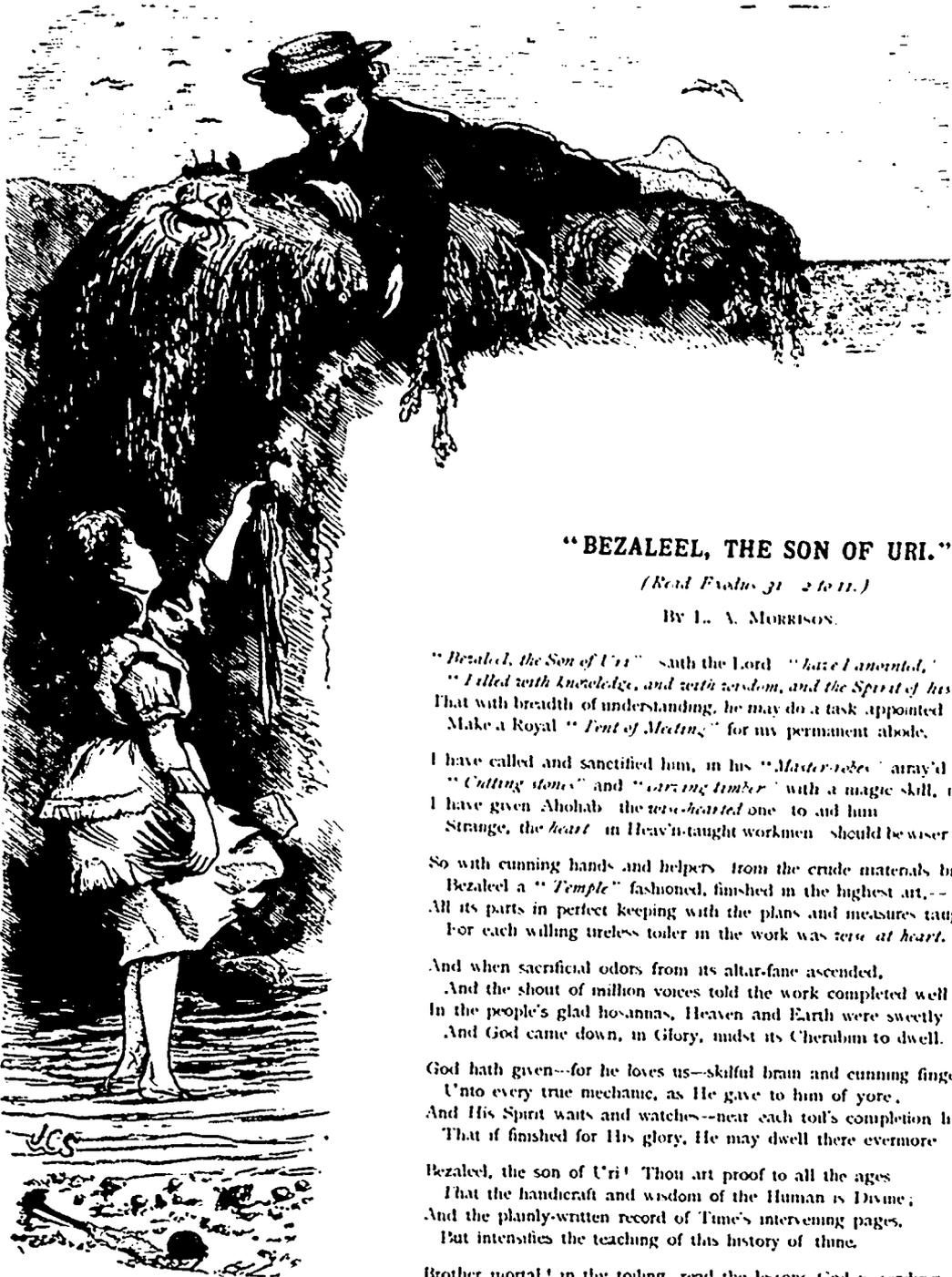
"Yours, only yours, my master!"

"Then I will live!"

They live there at Chateaugay to-day, for the lodge has expanded to a substantial dwelling, and Leduc is a county man. Sometimes the county insists upon his going to Albany as its representative: once the State sent him to Washington, and often Mr. Murgatroyd will have them and the children down in New York for some winter months; but they both like the Chateaugay best, and live there on their great domain just the natural, healthy, honest life that only great souls know how to live, cutting their notch deep into their generation, and leaving the world a better world than they found it. And the pride which as masters would have wrecked two lives, as servant makes two lives more honorable, more assured, and more respected than they would have been without it.--*Harper's Magazine.*

#### POINTS OF LAW.

FOR some time past there has been a controversy between the Saint Croix cotton mill, Milltown, N. B., and the owners of the Union mills as to the passage of logs by and below the cotton mill. The log owners claim that jams are caused by the defective passageway in the cotton mill dam, and the mill officials maintain that the lumbermen should keep the log roll clear. Legal proceedings have been begun in the provincial court. The cotton mill having been granted temporary injunction to restrain F. H. Todd & Sons, from allowing logs to remain on their lands, the decision of the court will be made later upon the motion to dissolve the injunction. The interests affected are large, and the case involves most of the law as to running logs and building dams on rivers.



### "BEZALEEL, THE SON OF URI."

(Read Exodus 31: 2 to 11.)

By L. A. MORRISON.

"Bezaleel, the Son of Uri" saith the Lord "have I anointed,  
 "Filled with knowledge, and with wisdom, and the Spirit of his God,  
 That with breadth of understanding, he may do a task appointed  
 Make a Royal "Tent of Meeting" for my permanent abode.

I have called and sanctified him, in his "Master robes" array'd him,  
 "Cutting stones" and "carving timber" with a magic skill, imbred,  
 I have given Ahohab the *wis-hearted* one to aid him  
 Strange, the *heart* in Heav'n-taught workmen should be wiser than the *head*

So with cunning hands and helpers from the crude materials brought him—  
 Bezaleel a "Temple" fashioned, finished in the highest art,—  
 All its parts in perfect keeping with the plans and measures taught him,  
 For each willing tireless toiler in the work was *true at heart*.

And when sacrificial odors from its altar-fane ascended,  
 And the shout of million voices told the work completed well,  
 In the people's glad hosannas, Heaven and Earth were sweetly blended,  
 And God came down, in Glory, midst its Cherubim to dwell.

God hath given—for he loves us—skilful brain and cunning fingers  
 Unto every true mechanic, as He gave to him of yore,  
 And His Spirit waits and watches—near each toil's completion lingers  
 That if finished for His glory, He may dwell there evermore

Bezaleel, the son of Uri! Thou art proof to all the ages  
 That the handiwork and wisdom of the Human is Divine;  
 And the plainly-written record of Time's intervening pages,  
 But intensifies the teaching of this history of thine.

Brother mortal! in thy toiling, read the lessons God is sending  
 From the dawn-light and the desert, by His spirit, through this word;  
 And let all thy labor praise Him, then—His grace thy toil attending—  
 Thou shalt have thy place and record in the annals of the Lord.

"THE ELMS," TORONTO.



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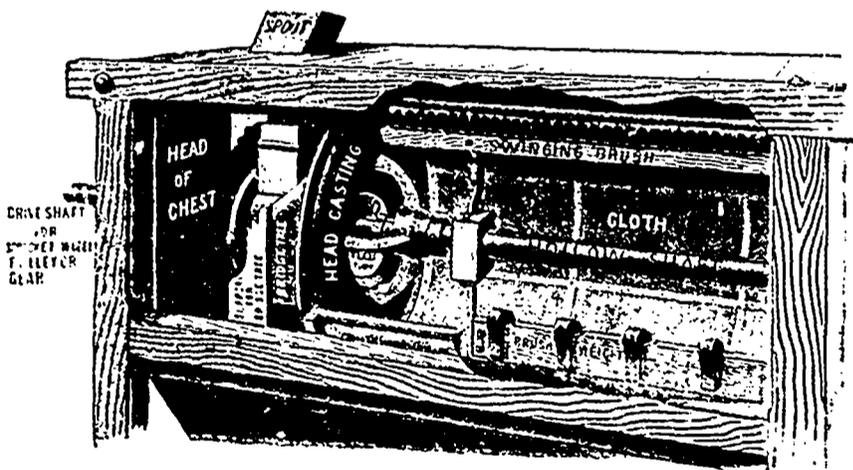
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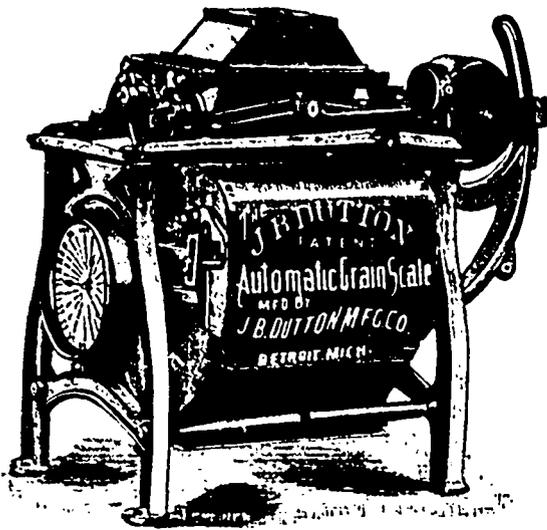
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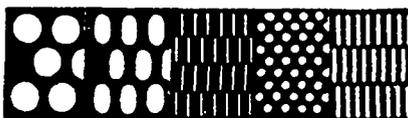
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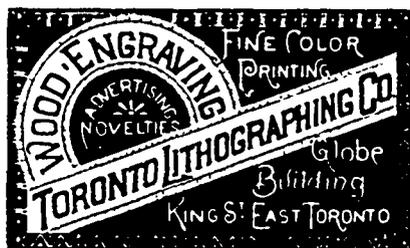
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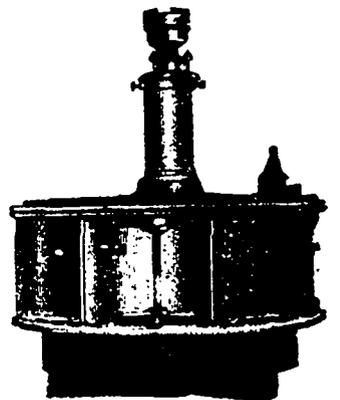
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