The United States Miller

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Office of MOUNT HOPE MILLS AND McLEANS STEAM ELEVATOR.

McLEAN, ILL., Dec. 13th, 1884.

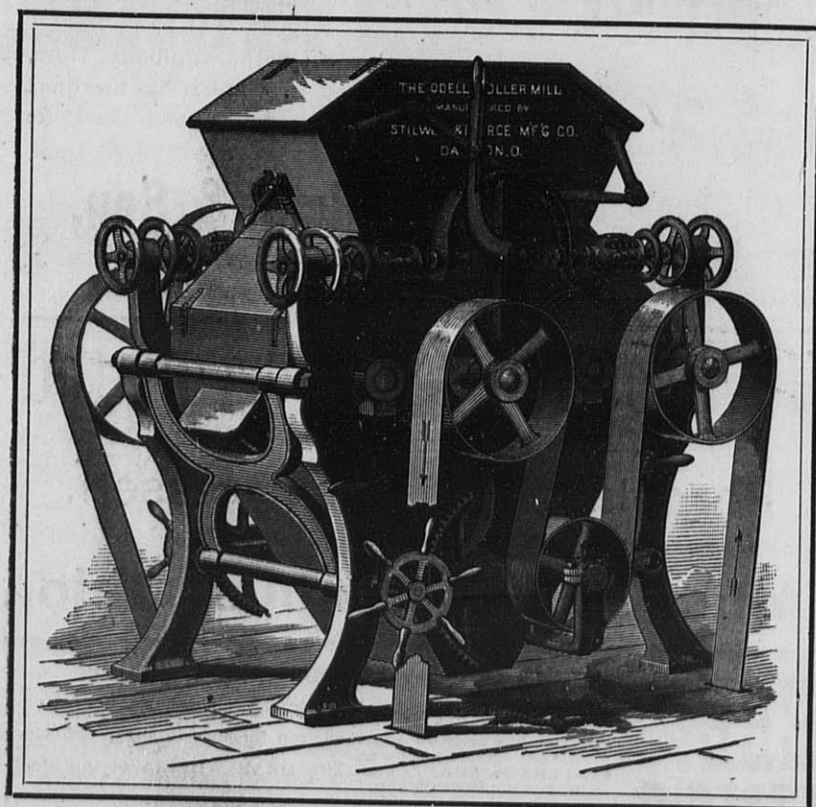
MESSRS. EDW. P. ALLIS & CO., Milwaukee, Wis.

DEAR SIRS:—I cheerfully accept the New Roller Mill that you have built in the place where the old buhrs and other machinery were taken out, and must say that it is fully up to my expectations in every respect, in workmanship and quality of flour produced.

Respectfully Yours,

C. C. ALDRICH.

ODELL'S ROLLER MILL SYSTEM



Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with unparalleled success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.

Odell's Roller Mill

Invented and Patented by U. H. ODELL, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

AN ESTABLISHED SUCCESS!

We invite particular attention to the following

POINTS OF SUPERIORITY

possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving-belt from the power shaft, thus obtaining a **positive differential motion** which cannot be had with short belts.
2. It is the only Roller Mill in market which **can instantly be stopped without throwing off the driving-belt** or that has adequate tightener devices for taking up the stretch of the driving-belts.
3. It is the only Roller Mill in which **one movement of a hand lever spreads the rolls apart and shuts off the feed at the same time.** The reverse movement of this lever brings the rolls back again exactly into working position and **at the same time turns on the feed.**
4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings **without disturbing the tension-spring.**
5. Our Corrugation is a decided advance over all others. It produces a more even granulation, **more middlings of uniform shape and size, and cleans the bran better.**

WE USE NONE BUT THE BEST ANSONIA ROLLS.

Our Corrugation differs from all others, and produces **less Break Flour and Middlings of Better Quality.**

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice, and long experience in arranging mills. Can furnish machines on short notice. For further information, apply in person or by letter to the sole manufacturers,

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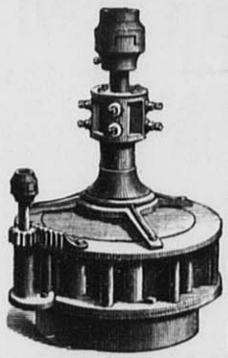

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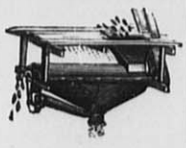

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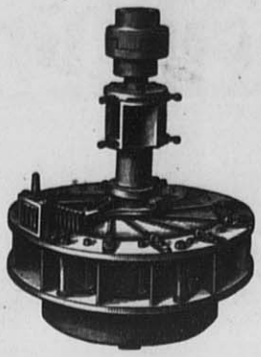

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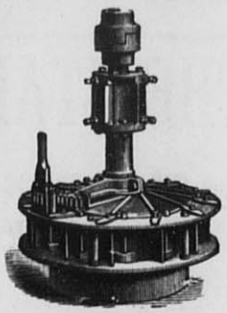

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For Economy, Strength, Simplicity, Durability, and Tightness of Gate, it has no equal.

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40,000 CRANK SHAFTS and 30,000 GEAR WHEELS of this steel now running prove this.
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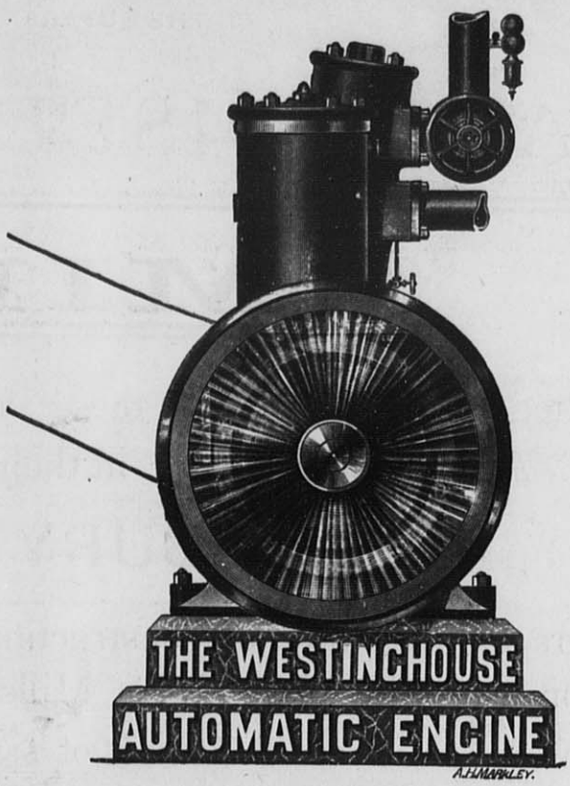

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These Towels are much more economical than waste; more convenient. They can be washed easily and quickly, and used again. Little or no danger from fire. They are now in use in the largest factories in New England and on the ocean steamers.

SIZE No. 1, 15 x 15 Inches.
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PRICES.

	No. 1	No. 2
Per Dozen	$ .75	$ 1.00
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Per Gross	6.00	8.25
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Please give them a trial. We can send 3 dozen No. 1, or 2 dozen No. 2, by mail.
Please send your orders to

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OF THE SUPERIORITY OF THE

GRAY NOISELESS ROLLER

MILL

Is furnished by the fact that these celebrated machines will be used by Messrs. C. A. PILLSBURY & Co., in their new

PILLSBURY "B" MILL

All bidders for the work of constructing this immense mill being required to figure on using the Gray Roller Mills. The selection of these machines for the new "B" mill was the result of several years practical test in the other mills owned by the same firm in competition with various other roller mills, the decision being unanimous, that, in all particulars, for practical work in the mill Gray's Noiseless Roller Mills were superior to all others.

We wish to assure our customers who may not wish to build 2000 barrel mills, but who wish to build mills of smaller capacity, that no matter what size mill they desire to build, or how small its capacity, the **GRAY ROLLER MILLS** are the best they can use, and we shall at all times furnish machines equal in every respect of material and workmanship to those which will be used in the new Pillsbury Mill.

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Sole Manufacturers of Gray's Patent Noiseless Roller Mills, adapted to mills of any desired capacity.

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THE SILVER CREEK DOUBLE SCALPER.

It is freely admitted that the quicker the separations of the various products of the crushed or ground wheat berry are made, the less danger there is of the injurious product deteriorating the better, or of making reductions of particles that should not be further pulverized.

Taking as an example the effect of carrying nicely dusted middlings in a conveyor a distance of twenty feet, it will be found that at the end they will be so reduced as to show from 15 to 25 per cent. of flour. In the case of middlings we actually see the injury done, and generally avoid it, *but are we not all the time doing the same thing, only that we do not see the harm, by our endless system of bolting, conveying and elevating. Is not the flour that is unnecessarily handled injured to quite the same extent?*

So long as nothing better than the old style scalper, in connection with dusting reel and double conveyor, the separating reel with double conveyor, and further the six or eight reel chest with more double conveyors, was used, we got along as best we could, but the miller often wondered what made his flour so soft. Has any one ever calculated the distance traveled by a particle of flour, from the first break to the packer? How much of it is useless? The object of the SILVER CREEK DOUBLE SCALPER is, when supplemented by a series of centrifugals, to reduce the useless handling by nearly one half, with an incidental saving of much power and room.

The Silver Creek Double Scalper is composed of two continuous surface cylinders, one placed inside of the other. The material to be treated is fed to the inside cylinder by means of the Fickinger patent feed device, where upon the surface of wire cloth or grit gauze as the nature of the stock may require the flour and middlings are at one separated from the coarser particles of wheat or bran, if the material treated be burr chop, which are, by means of elevator arms in the tail end of the cylinder, raised and discharged centrally through an opening into a discharge spout.

Surrounding the inside cylinder and supported on hoops and standards which rest upon it, is another cylinder of a continuous cloth surface of suitable mesh. On this the flour and middlings, as they are bolted through the cloth of the inside cylinder, are simultaneously separated, the flour passing through the meshes of the cloth into the hopper below, while the middlings are carried along the surface and discharged over the tail of the outside cylinder into a separate compartment, perfectly dusted and ready to go to the purifier.

To keep open the meshes of the cloth and insure a uniform bolting operation, a self-acting knocker is applied to the inside of the reel, and the further advantage of keeping the specks on the inside surface is gained.

It will be seen that three distinct separations are made. The wheat break to go to the next reduction rolls, the middlings perfectly dusted to go to the purifier, and the flour to go to a suitable centrifugal, and all these separations are made on a machine that takes no more room than the common scalper now used in connection with rolls, and without the injurious effect of conveyor mixing.

The manner of putting on the cloth is by means of lacing hooks and cord, approved by all who have seen it.

All machines are driven from tail end unless otherwise ordered. They can be run either right or left hand. This machine is manufactured by Aug. Heine, Silver Creek, N. Y.

MECHANICS IN EDUCATION.

Seeing and feeling are two senses which are more important in aiding to a knowledge of our surroundings than any others, and yet their education is generally neglected until the possessor begins to learn something of mechanics. By mechanics in this connection is intended any attempt to contrive, put together, manufacture or change by manipulation, so that a woman who contrives and fashions a dress out of the unformed and plain material may be a mechanic. The use of mechanical tools cannot be begun too early in life, whether the pupil is to be a practical mechanic or to follow some other calling—there are few vocations that do not demand for success some practical knowledge of mechanics. "The whittling Yankees" possibly owe much of their undisputed position as inventors and good mechanics to the habit of using a pocket knife. A very prominent inventor and superior mechanic recently remarked that the bent of his taste as a mechanic was undoubtedly given by his schoolmaster, who was a carpenter and joiner, and who worked at his trade in summer and taught the district school in winter. If a boy did not possess a foot rule, he made one for him from a shingle or constructed an inch scale. The foot rule and a pocket knife he considered necessary in a schoolboy's outfit, and he encouraged his pupils to estimate dimensions by the eye and then verify them by measurement. Wind-wheels and water-mills were part of the pedagogue's training, and the click-clack of one or the other could be heard all about the school-house and on the borders of the brook in an adjoining field. Vanes cut from pine boards, toy ships, bird houses, bows and arrows, pudding sticks, and most of the toys used by boys forty years ago were made by the schoolmaster's boys under his direction. To-day, besides the prolific inventor named, there are one superintendent of a railroad company, one bridge builder, one superintendent of a large manufactory, and two architects to be counted from memory, who probably received their bent for mechanics from the carpenter schoolmaster.

All these lead lives of usefulness—they are producers, adding to the wealth and comfort of the country and the people; and nothing in their education makes them less valuable members of society. One of the most distinguished pulpit orators was a blacksmith, and many men who are noted for their eminence in literature, divinity, law, medicine, and as educators, have had a mechanical training.—*Building and Engineering Times.*

CRUSHING ROLLS.—The use of rolls in place of stamps for crushing ore is becoming more and more general in this country and is universal in the new and best constructed foreign works. The plant as now adopted in concentrating works consist usually of one or two sets of rock breakers of the Blake or other convenient pattern. These reduce the size to about ¾-inch. Two sets of Cornish rolls reduce the ore successfully from this size to the maximum desired in concentrating, which may vary from $\frac{1}{30}$ inch to ¼ inch. The ore from fine rolls goes to sizing screens, and from these the sizes down to say $\frac{1}{50}$ inch go to jigs, the ore finer than $\frac{1}{50}$ inch going usually through spitzkasten and sometimes directly to slime tables or belts of one of the accepted types. Perhaps the most important machinery in such a mill is the crushing rolls. These m ust combine enormous strength durability of wearing parts, facility of repaisr with moderate first cost.

The rolls are now almost always made with removable shells of steel or of special grades of iron, and they vary in diameter from 20 inches to 36 inches, and in width from 10 inches to 16 inches. Sometimes one roll is made wider than the other, but there is an object in this, as far as possible making the parts interchangeable.—*Eng. and Mining Journal.*

A LOAF OF BREAD.

"Are you most ready?" called a merry voice from the foot of the stairs.

"Almost."

There was something not altogether satisfactory in the answering tone. Miss Dallas deposited the basket she held beside the newel post, gathered up a bewildering combination of mull puffs and embroidery high enough to display a daintily shod foot, and tripped lightly up the stair-case.

"I shall have a better opinion of myself from this time forth," she declared, as she paused at the doorway. "For once I am on time and you are not. Such a thing never happened before!"

"Make the most of it then."

The retort came with an effort that was instantly detected.

Miss Dallas made a sudden onslaught upon the girl who stood before the mirror finishing her toilet. "What is the matter?" she demanded, laying constraining hands on Polly's shoulder, and looking straight into the brown eyes that were thus forced to meet her own blue orbs. "You've been crying."

"Well, what then?"

"Why, that you have had good and sufficient cause, Polly," with quick apprehension; "is it Jack? Have you heard from him?"

Polly smiled reassuringly, in spite of the red rims about her eyes.

"You needn't begin to worry about Jack," she answered stooping to kiss Jack's sister. "Yes, I had a letter last night, and he was well and in excellent spirits."

"*We* didn't hear," said Katrine Dallas, accenting the personal pronoun. "If we wern't so fond of you, Polly—one and all of us—I don't know how we'd be able to endure you!"

"But you do love me, you see; and it wasn't Jack's fault this time," Polly answered incoherently. "His letter to me was cut short by a party of men who had ridden over from Birch Creek. He was going to write to your mother that night, but of course he couldn't then."

"And of course it was you that came first," said Katrine, with pretended jealousy.

"It is not that he loves Cæsar less," began Polly.

"That he loves Rome more. No doubt you think that is a very satisfactory explanation, Miss Polly, but opinions may differ."

"Yours don't," said Polly, putting her arm around Katrine's waist. "Come,—suppose these people up at the church are wondering where we are, and abusing us as unprofitable members."

"They may continue in that laudable occupation," said Katrine, coolly; "it will give them something to do. Nobody ever goes to a church festival at 3 o'clock of a summer afternoon—it's all nonsense to open before 6.

"But we promised to be there."

"And you wern't ready," interrupted Miss Dallas. "Now I don't propose to go till I know what change has come over the spirit of your dreams."

"I'd rather not tell you."

"Is it your own worry, or somebody's else?"

"Mine," was the despondent answer. "Do not bother over it, Katrine. It can't be helped, and there's no use talking about it."

"The use is that I love you, and that I am Jack's sister."

"That's the very reason."

Katrine's blue eyes opened wide, and she planted herself defiantly against the door. "Then I *insist* upon knowing, Polly," with a sudden change of voice and manner. "Don't you love me [one arm curled around Polly's waist, a blonde head rested against Polly's shoulder, and two blue eyes looked with a pleading expression,] enough to trust me? I wouldn't treat you so."

Polly melted, visibly. "I am making a mighty mystery," she said, with a little hysterical laugh, over a question of—*clothes!* You don't credit me with being silly enough to cry because I couldn't have the purple and white linen I had set my heart on?"

"And I don't now," said Katrine, quickly. "Tell me what you mean."

"I mean that yesterday's hail-storm has upset all my plans and preparations."

"What a frightful storm it was! Weren't you frightened, Polly?"

"Yes—for the *grapes*."

Katrine looked up with wondering eyes. "I begin to understand," she said, slowly. "Won't you please try to forget that I am Jack's sister; I was your friend before he appeared on the scene, remember! and I want this thing explained."

"It is simple enough," said Polly with a sigh. "You've been nursed in the lap of luxury all your life, you ridiculous little aristocrat! but I very soon had a practical understanding of the disastrous effects of frost and hail, drought and potato-bugs, army-worms and grasshoppers. If the crops sold well things were comfortable enough; if they didn't, why, we had to curtail our wants—that's all."

"And this hail storm—"

"Cut the grapes all to pieces," was the succinct answer. "The crop was already sold, and father had promised the money to me for ——"

"Oh!"

"More than that," said Polly, with averted eyes, but with a full determination to explain the situation thoroughly, now that she had begun; "the corn is so hopelessly hurt that father will have to plow it all up again; there is nothing that isn't injured, more or less. So you see," her voice faltered a little, but she went on bravely, "even if I would consent to his taking it away from the others, father cannot give me the money that he promised, and I can't be married this year. There! [explosively] I suppose it's very stupid of me to tell you all this, but you might as well know the truth."

"I should think so!" Katrine put up her red lips to be kissed. "But, Polly, you don't imagine that Jack will consent to putting off the wedding day for any such cause as that? What difference will the little more or little less make to him?"

"The difference would be to me," was the proud answer. "You don't understand, Katrine; things come to you without the sweet sense of providing, but you know just as well as I do that there are some things I must have—if it's only the one new dress. Hats, gloves and shoes can't be bought without money, and failing the money that is out of the question now; my worldly all is about two dollars and a half! I told you it was useless to talk about it. Come, I've bemoaned myself long enough; I'm not the only girl in the world who is disappointed. We were due at the church an hour ago."

"Polly, I wish you loved me well enough to let me ——"

"Stop! said Polly, decisively. "I'd rather you wouldn't say it, please.

"Why not?"

Polly turned upon her with flushed cheeks. "I have heard," she said "of girls who permitted the men they were to marry to supply the *trousseau*. I always had my opinion of such girls. Don't make me feel close kin to them."

"It isn't the same thing at all."

"It's so near it that I would rather not discuss the question. Is your basket of supplies all ready? Mine is yet to be packed."

Polly's tone was final, and Katrine could only follow in silence as her friend led the way to the store room, where the contributions for the church fair and festival were set out in goodly array on the shelves.

"I don't wonder they always ask you to send bread and rolls," she observed, breaking off a corner for her own delectation. "I never see such bread any where else. Yours is nothing short of perfection."

"I can't see why any one should have poor bread. There need be no difference in result if there is no difference in the process."

"You wouldn't convince the average cook that bread-making is one of the exact sciences," laughed Katrine. "What a good cook was spoiled in making you a lady!"

"That doesn't follow by any means," retorted Polly, who was proud of her thrifty New England bringing up. "Every lady ought to be a good cook; though, mind you—I don't insist upon her doing it. Her servants should be trained so that her own time may be spared for something better."

"You may bring both theory and practice into the Dallas family as soon as possible," said Katrine slyly. "We always approve of you, Polly."

"That's better luck than I deserve," said Polly," taking good care as she spoke that her light, white loaves should not encroach upon the cocoanut-puffs which were to bear them company. "I am all ready now; lead the way, Katrine."

The ladies of the Church of the Good Shepherd had pledged themselves in solemn conclave to pay off the remainder of the Church Extension Fund debt. For weeks the rival sewing societies had been piling up articles salable and unsalable in their respective baskets; the committees had canvassed the town for contributions. Miss Winter, the President of the Guild, whose sensible, sunshiny face belied her name, had marshaled her corps of assistants early in the morning, and the result of their labors was something for every church-member to be proud of, so bowery and flowery was the effect.

Katrine Dallas and Polly Reynolds, as members of the Young Ladies' Sewing Society, and teachers in the Sunday-school, were to take active parts in the business of the evening; and though Polly could not altogether banish the memory of the bruised and battered grape vines whose wreck had borne down so many fond, girlish hopes, she threw herself so bravely into the spirit of the occasion, that no one guessed what damage the storm had done to her. Its severity was a frequent theme of conversation that evening, each new comer having some fresh tale to tell of the fields laid waste, gardens destroyed, green-houses broken, and windows that looked as though the village had laid under a bombardment.

"Well, I'm glad it came yesterday, since it had to be, and not to-day," exclaimed Miss Partridge, coming up for a fresh supply of salad and sandwiches.

"The day makes a difference to us," said Mrs. Kemble, more gravely, "but it will make no difference in the suffering and privation that our poorer neighbors will have to bear."

"It falls heaviest on the poor, of course," said a third speaker, "but the effect of that storm will be felt in more directions than we see yet, I'm afraid."

"Another dollar added to the price of every barrel of flour, I suppose, for one thing," remarked Mrs. Miller, resignedly. "Which being the case, let us eat, drink and be merry while we may! No, Miss Partridge, you can't have the half-loaf for your sandwiches; I'm saving that for the rectory party. It's too good to waste on the 'vulgar herd;' I want it to be properly appreciated."

"One would almost be willing to live by bread alone, if the bread were like this. I wonder who made it?

"I don't know," said Mrs. Kemble, "but I know I would like to enter into a contract with the maker to supply me with the staff of life in future. I would gladly offer an increase on the baker's prices."

"So would I," responded Mrs. Barlowe; "it would be well worth three or four cents a loaf more."

"Why can't people do such things?" asked Mrs. Miller. "I suppose the mere suggestion would be an offense, but when these worthless Bridgets of ours never send up good bread twice running, one can't help wishing it were possible to make a neighborly little arrangement with somebody else's Bridget."

"This may be only a happen so!"

"Very true! yet there are people who make a habit of having good bread, and some of these days I shall offer my idea to the person who will be able to carry it out."

"Count me as one of that person's steady customers," said Mrs. Kemble with a laugh.

"And I pledge myself as another," added Mrs. Barlowe.

"And I."

"And I."

"And I," came in laughing response from the different members of the group, who separated, little dreaming that their careless conversation had opened up new hopes and possibilities in the mind of one to whom yesterday's storm had brought bitter and unlooked for disappointment.

"I will find out whether they really mean it," thought Polly, with determination, "and if they do, why, they shall have the good bread they make such a fuss about. And I—well I shan't have to make Jack wait till next year." Whereat Polly smiled sweetly at old Mr. French, the most confirmed bachelor in town, and offered a flaxen haired doll in a pink Mother Hubbard for his purchasing.

"What's the matter with you, Polly?" asked Libby Power, as Mr. French passed on grimly. "He might have bought that cigar case of Fanny Beale's or one of those plaques—are your wits wool-gathering?"

Polly laughed good naturedly, and resigned the business of the fancy table to Miss Libby's more capable direction. Her thoughts were busy with plans and calculations in which the business of the church had no share. She had fallen into a trick whenever her mind was busier than her fingers, of playing with a ring she wore on her left hand, and with the unconscious action came a sudden misgiving as to Jack's opinion of her plans—or if not, of Jack's family. Something was due to them; but remembering the tone of the conversation she had overheard, Polly took heart of grace. She would prove that such things might be done between ladies. The venture was a little unusual, but the girl had an unaffected contempt for the false pride and fear of "losing caste," which might have prevented a less self-reliant girl from taking advantage of the opportunity thus offered. Long before the end of the evening her fear of the Dallas opinion took the unexpressed form of hoping they would say nothing to dissuade her, since she was serenely sure that such opposition would only tend to lower them in her estimation.

The details of the plan were her last thought as she went to sleep that night, and mingled oddly enough with her first waking thoughts of that far-away lover who was looking forward to the wedding day that should crown his home-coming at Christmas time. A ray of sun-light fell upon her ring, throwing its design into bold relief. It was not the conventional engagement ring. Some unexplained feeling of pride had made her refuse the offered solitaire—diamonds would be fitting ornaments for Jack's wife, but for Polly Reynolds, something simpler seemed in better taste. "If you want me to wear a ring, let it be really your own," she said. "I would rather wear that seal-ring of yours than anything you could buy for me," and since then the tiny polished oval, bearing the quaint device of an overflowing horn of plenty, with the carved legend "God gives" above it, had been to Polly her promise of all good things in the future.

"*God gives plenty*," she said to herself, holding up the hand that bore the assurance. "But God gives it to those who work for it."

[TO BE CONTINUED.]

THE PLANCHETTE.

There are some indications that the mysterious little planchette board, like roller skating, is coming into fashion again. No adequate explanation of it has ever been received, though many have been offered. The construction is simply a plain, heart-shaped cedar board fixed upon two metal legs, to which are adjusted wheels that move easily and lightly in all directions. At the point of the heart a hole is made, and a sort of round case is fixed to hold an ordinary pencil firmly. That is all there is of it.

Put a pencil at the point, and then put two hands upon the board. After keeping the hands lightly and quietly in their places a few minutes, planchette will often begin to write. It usually scribbles out yes and no, and senseless gabble of one sort or another, to which no importance must be attached. It is claimed positively, however, that the board has written intelligent answers to questions, which those holding their hands upon it could not possibly be aware of. It may be. But, before believing this is true, ask some questions and see for yourself. It is one of those cases in which the word of no second person must be taken. Above all, do not have any superstitions about the thing, taking for granted that the writing is done by spirits.

Planchette is merely a puzzle, to be investigated as any other scientific subject would be, on the same sort of evidence, and weighed by the same judgment. Don't admit the element of humbug and witchcraft and nonsense and superstition into your soul. Thus you will not be likely to lose your head, even when amusing yourself with planchette. It is a fascinating study in psychological science, nothing more. It may be that there are powers and forces in the human organization that have hitherto been undeveloped in all but a few exceptional cases. It may be that we are on the verge of some marvelous discoveries in mental science. So much it is safe to admit.

The board writes best in the position described, with two hands, a right and left, upon it. What does the writing nobody knows. The best authorities have concluded that it is done unconsciously by the person whose hands are upon the board. A nervous fluid is supposed to pass from the hands and from a current that moves the board. The explanation at best is a lame one. But this much is certain: Planchette writing as an entertainment can do do harm as long as the experimenter does not let go his common sense and put a superstitions faith in its revelations.

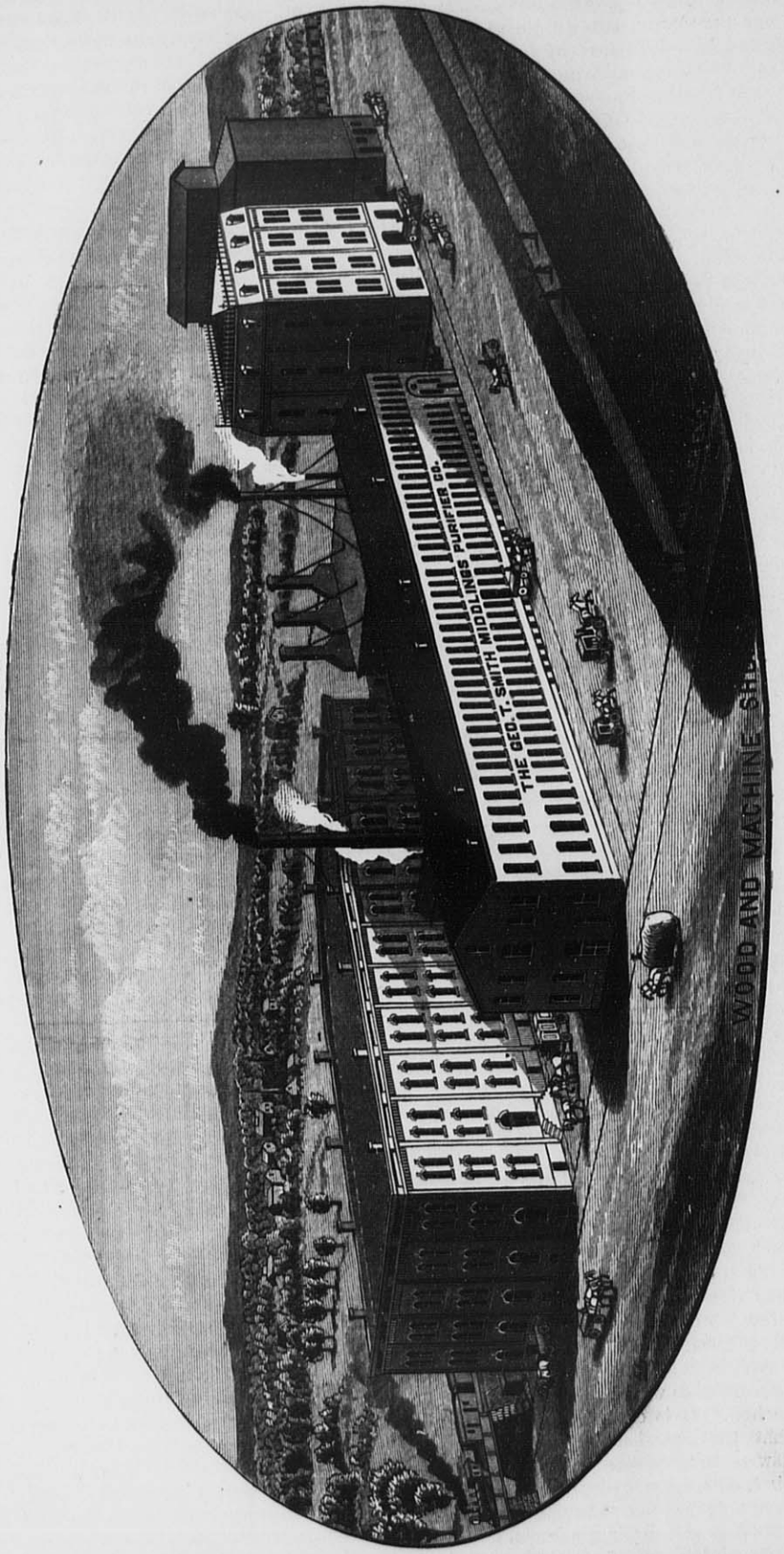
THE EDUCATION OF THE ARTISAN.

Professor Huxley says: For myself, I look upon simple knowledge by itself as of far less importance to the artisan in his career in life than a number of other qualities. I do not say that knowledge is not an extremely good thing; but if a man is to make a good workman, or to do anything in practical life, you must give him an education that fits him for the conditions of life with which he has to deal, and you will not give him that education by filling his head with a number of intellectual abstractions, or even by giving him the largest acquaintance with scientific principles. And I think it is a profound mistake, considering the career to which the majority of artisans or persons in that class of life are necessarily bound, ever to take them out of the wholesome discipline of practical contact with the realities of life, for the mere sake of giving them a greater or less amount of knowledge. A man who is inclined to do so may always pick up knowledge, and he may do so at the same time that he is getting his education in the highest sense of the word, out of his contact with the realities of his daily life; but if you make a bookworm of him, if you take him away from all that contact with reality and turn him back afterward into it, he has lost touch of life.

I speak with the greatest hesitation, because I have nothing to do with industrial pursuits; but I have had to do with mankind in many stations in life, and it seems to me that what is wanted in a foreman is a man of energy, punctuality, business habits, and power of dealing with men, all of which things are not to be got out of books or laboratory work. These qualifications are the most essential qualifications in a foreman, and what you want besides in such a man is not book learning, but an intelligence sufficiently trained to be able to deal with new conditions, and an amount of knowledge sufficient to enable him to know where to go to find more if he wants it.

WORKS OF THE GEO. T. SMITH MIDDLINGS PURIFIER CO., JACKSON, MICH., U. S. A.

We have the pleasure of presenting to our readers herewith a view of the works of the Geo. T. Smith Middlings Purifier Co., the products of which are to be found in flour mills in every civilized country of the world. The founder of this mammoth enterprise was Mr. Geo. T. Smith, a miller's son, who in 1870 was working as a miller for Stephen Gardner, at Hastings, Minn., in the old "Vermilion Mills." This mill became most favorably known at the time for the excellent quality of its flour, due to a peculiar dress Mr. Smith used on the stones. Shortly after he became head-miller in Hon. Geo. H. Christian's mill in Minneapolis. The new dress which he used on the stones producing a very large amount of middlings, he used a device of E. N. Lacroix for treating them, which, after being greatly improved by him, produced ultimately a complete revolution in milling.



WORKS OF THE GEO. T. SMITH MIDDLINGS PURIFIER CO., JACKSON, MICH.

In 1877 the manufacture of Smith Middlings Purifiers was begun by Bennett, Knickerbocker & Co., in Jackson, Mich., and 120 machines made that year. In April 1878, the present company was organized. During 1879 the works were destroyed, 600 machines being made and sold.

In 1880 a thousand machines were sold. In February, 1880, he visited Europe; returned to be present at the Millers' Exposition in Cincinnati; returned to Europe, remaining there for over a year, where he succeeded in effectually introducing his purifiers and system of milling. The business of the company increased rapidly, and it was found absolutely necessary in 1882, to erect larger works. Mr. Smith became the owner of a controlling interest in the stock of the company, and since then has been constantly burdened with the general management and superintendence of its ever increasing business.

In 1883 a foundry was purchased on Pearl street, a third and then a fourth building was erected, the latter for pattern making and drafting. Steel was substituted for iron, and hardwood for soft, in the machines. The excellence of the work is shown by the fact that the repairs on each machine sold, it is said, have not averaged fifty cents each. Mr. Smith became President of the company in 1883, G. S. Bennett, Vice President and Secretary, and Mr. Harmon, Treasurer. More than 3,000 machines were sold that year. The company have works also at Stratford, Ont. The full capacity of the Jackson plant is 17 machines per day. The pay roll which numbers 360 men at Jackson and 150 in Canada, requires a monthly payment of $15,000.

The two-story building shown in the engraving is 56x218 feet, having a basement of equal area, and sufficient height to allow the operation of machinery. The four-story building is 70x105 feet, and well adapted to the requirements of the company. There is another building, not seen in the cut, 52x60 feet, and two stories high. The total floor surface is 85,000 square feet, to which must be added an addition 97 feet long, to the main building, erected last year. These works are thoroughly equipped with all the most recent machinery and appliances, and the system of division of labor is carried to perfection as far as practicable. The facilities for shipping are ample, private tracks running to the doors of the works, where the machines are loaded and sent to all parts of the world. There are some 250 electric lamps used for lighting the entire works. Power is supplied by a 250-horse power Reynolds-Corliss engine.

Take it all in all, the works are as complete and perfect in detail as those of any manufactory in this country.

RULES FOR MANAGEMENT AND CARE OF STEAM-BOILERS.

ADOPTED BY THE HEWES & PHILLIPS IRON WORKS, NEWARK, N. J.

1. *Condition of Water.*—The first duty of an engineer, when he enters his boiler-room in the morning, is to ascertain how many gauges of water there are in the boilers. Never unbank nor replenish the fire until this is done. Accidents have occurred, and many boilers have been entirely ruined from neglect of this precaution.

2. *Low Water.*—In case of low water, immediately cover the fires with ashes, or, if no ashes are at hand, use fresh coal. Do not turn on the feed under any circumstances, nor tamper with or open the safety-valve. Let the steam outlets remain as they are.

3. *In cases of Foaming.*—Close throttle and keep closed long enough to show true level of water. If that level is sufficiently high, feeding and blowing will usually suffice to correct the evil. In cases of violent foaming, caused by dirty water, or change from salt to fresh, or vice versa, in addition to the action before stated, check draft and cover fires with fresh coal.

4. *Leaks.*—When leaks are discovered they should be repaired as soon as possible.

5. *Blowing Off.*—Blow off 8 or 10 inches at least once a week; every Saturday night would be better. In case the feed becomes muddy, blow out 6 or 8 inches every day. Newer blow entirely off, except when boiler needs scraping or repairing, and then not until fire has been drawn for at least ten hours, as boilers are often seriously injured or ruined by being emptied when the walls are hot. Where surface blow-cocks are used, they should be often opened for a few moments at the time.

6. *Filling Up the Boiler.*—After blowing down, allow the boiler to become cool before filling again. Cold water, pumped into hot boilers, is very injurious from sudden contraction.

7. *Exterior of Boiler.*—Care should be taken that no water comes in contact with the exterior of the boiler, either from leaky joints or other causes.

8. *Removing Deposit and Sediment.*—In tubular boilers the hand-holes should be often opened, and all collections removed from over the fire. Also, when boilers are fed in front, and blown off through the same pipe, the collection of mud or sediment in the rear end should be often removed.

9. *Safety Valves.*—Raise the safety valves cautiously and frequently, as they are liable to become fast in their seats, and useless for the purpose intended.

10. *Safety Valve and Pressure Gauge.*—Should the gauge at any time indicate an excessive pressure, see that the safety valves are blowing off. In case of difference, notify the parties from whom the boiler was purchased.

11. *Gauge Cocks, Glass Gauge.*—Keep gauge cocks clear and in constant use. Glass gauges should not be relied on altogether.

12. *Blisters.*—When a blister appears there must be no delay in having it carefully examined, and trimmed or patched, as the case may require.

13. *Clean Sheets.*—Particular care should be taken to keep sheets and parts of boilers exposed to the fire perfectly clean, also all tubes, flues and connections well swept. This is particularly necessary where wood or soft coal is used for fuel.

14. *General Care of Boilers and Connections.*—Under all circumstances keep the gauges, cocks, etc., clean and in good order and things generally in and about the engine and boiler room in a neat condition.—*American Machinist.*

ITEMS OF INTEREST.

A Fishing Cat.—One of our county commissioners owns a mill and a pond, and grinds corn for the public. He also owns a large cat that, as soon as the mill is stopped by shutting down the gate, will immediately run down behind the mill and get on a log just over the sheathing over which the water is flowing. She will then look very intently into the water, which is from 18 inches to 20 inches deep, until she spies a fish; she then plunges into the water, frequently burying herself under it, but almost always comes out with a fish. She then quietly sits down on a rock near by and enjoys her meal.—*Charleston News and Courier.*

Killed by an Ærolite.—An apparently authentic account comes from Somerset, Pulaski county, Ky., of the death of a farmer named Julius Robble by a meteor which fell from a clear sky on the morning of the 1st instant. The meteor was very brilliant, emitting a light described to be more dazzling than that of lightning. It struck the man's head and instantly exploded, mangling his body frightfully. His clothing was torn and burned, and his body was streaked with burning streams of molten iron or detached stones of white heat. His limbs were charred and bent out of all shape. The meteor burned itself deep in the earth, and sent splinters of itself in all directions, some of which were as large as a peck measure. A witness describes the noise it made as the roaring of a dozen locomotives blowing off steam. So swiftly did it drop that the rushing sound, the flash and the explosion were almost simultaneous.

The Italian theatres, which are said to be the finest in the world, are oval in form, not horseshoe shaped as in this country. This enables the stage to be seen from every seat in the house, and adds to the acoustic qualities of the building. These theatres are built upon a thoroughly fire proof plan, being usually of brick, with a small amount of wood work. The seats being wide apart and the aisles numerous, offer free passage to an audience in case of panic; the floor of the parquette is the solid earth itself, covered with gravel.

Broad Wagon Tires.—We learn that J. W. Sanborn of the Missouri Agricultural College, has been making some experiments to demonstrate the value of good roads and broad wagon tires on road and farm wagons. He says that the condition of the country road is one of the surest indications of the civilization of the people. The trials were made with a carefully tested dynamometer; the loads drawn were 3,665 pounds each, and the felloes and tires were one and a half and three inches, respectively. The first test was on blue grass sward somewhat moist, though it had not rained for two weeks. The average draft of the narrow-tired wagon was 439 pounds, while that of the wide-tired was 310 pounds—a difference of over 41 per cent. in favor of the wide tire. Assuming the wagons to weigh 1,000 pounds each, the same team could draw 3,248 on the wide tire as easily as 2,000 on the narrow, and, besides this, the wide tires did not cut through and injure the turf as the others did. In a further test, on a partially dried dirt road, the broad wheels showed a draft of 371 pounds to 441 pounds for the narrow, being 12.7 per cent. in favor of broad tires, so that with the same wear and tear of team, the broad-tired wagon could carry 331 pounds per ton load more than the other. Although these differences disappear on hard, well-made roads, he concludes that every farm should have one or more broad-tired wagons, and says the teamsters on the college farm always prefer such for use about the farm. We have long known the value of a broad tire for farm wagons, and have such a one for all work on raw ground or meadow land. It costs very little, if any more, and soon pays for itself by saving the team.—*Farm Implement News.*

A Pneumatic tube between London and Paris.—The plan to connect Paris and London with pneumatic tubes has been reported favorably by the French engineers and submitted to the Government. It is proposed that two pneumatic tubes be laid, following the line of the Northern Railroad from Paris to Calais, thence across the channel to Dover, following the line of the South-eastern Railroad to London. Letters could be thus transmitted between the two capitals in one hour. Wagonettes like those now used to transport telegrams from Paris are to be used, weighing 10 kg. and capable of carrying 5 kg. weight of mail matter. Twenty pneumatic trains are to be started every hour. The total cost is estimated to be $7,000,000. The total distance is 475 km.

FLOUR MILLING INDUSTRY IN PENNSYLVANIA.

In the preparation of statistics regarding the flour milling industry of the state, for embodiment in the report of the secretary of Internal Affairs for the year 1883, there were sent out 3,781 blanks to the millers of the state to be filled out and returned. From 512 of these no reply was received, and 799 were returned unfilled; 2470 returns were received properly filled out. There are understood generally to be between thirty-two and thirty-three hundred merchant and grist mills in the state. Many of those receiving the blanks evidently did not care to show the small amount of business done, and others, through lack of interest probably, thought it not worth their while to make a reply. The county making the largest return was Lancaster, which reported 171 mills, with 537 runs of stones and 65 sets of rolls, the amount of all grain ground in these mills being 2,006,395 bushels. The county next in order was Berks, which reported 127 mills, with 397 runs of stones, but giving no satisfactory data as to the number of sets of rolls in use. The amount of grain ground in these mills was 911,748 bushels. The third county in the list was Chester, which replied to 126 inquiries, and these reported 285 runs of stones, 32 sets of rolls, and ground 860,438 bushels of grain. Considering the limited facilities afforded for acquiring the information desired, the result must be taken as satisfactory. Many of the mills receive their mails through more than one of the country post offices, and the published list of the mills often reports the same mill to more than one address. This accounts for a part of the discrepancy between the returns and the approximate known total of mills. The chief of the Buerau, Hon. J. B. McCamant, was most untiring and enthusiastic in the prosecution of his work, but when it is known that but two thousand dollars was allowed by the state for the collection of statistics in every branch of manufacture followed in the state, any incompleteness in the result may be readily accounted for.—*Millers' Review.*

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OPERATIVE MILLERS ASSOCIATION.

The object of this Association is to unite all practical millers, to give aid to its members, to assist each other to procure employment, to establish a widows' and orphans' fund, and for the advancement of the art and science of milling. The officers of the Association are: Dan J. Foley, President; Tom Stoutenberg, First Vice-President; John T. Gebbie, Second Vice-President; A. Snuggs, Secretary and Treasurer. 821 Howard Street, St. Louis, Mo.; Dan J. Foley, Alex. Frazer, David Pollock, Trustees. Hall at 110 N. Fifth Street, St. Louis.

THE fire losses among the mills in this country during April, amounted to about $200,000.

CANADIAN millers have received very large orders for flour and wheat during the past six weeks.

The National Coopers' Journal, is the name of a new paper published in Buffalo, N. Y., in the interests of the cooper trade. It presents a good appearance.

WE acknowledge the receipt from the secretary Mr. Geo. F. Stone, of the Twenty-seventh Annual Report of the Chicago Board of Trade.

THE *Electric Review* is the name of a new paper issued by the Taylor Publishing Co. at Chambersburg, Pa. The first number, just at hand, is a very good one.

THE firm of Vœchting, Shape & Co. has been incorporated under the style of THE JOSEPH SCHLITZ BOTTLING WORKS (*Limited*). The new company will continue to supply the world with the well-known Schlitz' Bottled Beer. The business has grown to enormous proportions, and gives employment to a large number of persons.

THE American Exhibition of the Arts, Inventions, Manufacturers, Products and Resources of the United States of America will be opened in London, England, May 1, 1886. All arrangements for its complete success are being rapidly made, and the result of this exhibition will doubtless prove of vast benefit to our country. Full particulars may be obtained by addressing "The Secretary of the American Exhibition, 7, Poultry, London, E. C., England.

THE imports of American flour into Great Britain for the cereal year 1883-84, were 6,263,000 sacks, and for the eight months of the present cereal year, 5,246,000 sacks or equal for the full year to 7,869,000 sacks. These figures are highly interesting to British millers, bakers and farmers, and it is not surprising that even free trade journals are crying out for protective duties on flour. The large mills of Belgium are also crowding their flour into the London market. With the British market full of foreign flour, the British miller has plenty of time to think over the situation.

A newspaper article is not valuable, simply because it is *original*. We have been driven to make this observation by the fulsome self-praise indulged in by some of our contemporaries. It would be a blessing to the reading public if all newspaper writers (circumstances permitting) would lay aside their articles for twenty-four hours after writing them and then read and carefully revise before printing. True, we should all need larger waste-baskets, but the long suffering public would doubtless be willing to "chip in" and buy them.

WE present on another page, a report concerning the railway and export development in India. As a great deal has been said and written in this subject during the past year we deem it worth while to publish Consul Shaw's report in full. India may prove a strong competitor for the trade in Europe, which the United States now enjoys, but as we have said before, we do not think that the time is *close* at hand when Europe will obtain the bulk of its bread-stuffs from India instead of the United States. British millers will willingly pay more for American wheat than they will for Indian, because it is more desirable as to quality.

BUILDING FOUNDATIONS ON QUICKSAND.

Foundations in quicksand often have to be built in places where least expected, and sometimes the writer has been able to conveniently span the vein with an arch and avoid trouble, but where it cannot be conveniently arched over it will be necessary to sheath-pile for a trench and lay in broad sections of concrete until the space is crossed, the sheath piling being drawn and reset in sections as fast as the trenches are leveled up. The piling is left in permanently if it is not wanted again for use.

Sometimes these bottoms are too soft to be treated in this manner; in that case boxes or caissons are formed, loaded with stone and sunk into place with pig iron until the weight they are to carry is approximated. When settled the weights are removed and the building begins.

Foundations on shifting sand are met with in banks of streams, which swell and become rapids as each winter breaks up. This kind is the most troublesome and dangerous to rest upon if not properly treated.

Retaining walls are frequently built season after season, and as regularly become undermined by the scouring of the water. Regular docking with piles and timbers is resorted to, but it is so expensive for small works that it is not often tried.

Foundations are formed often with rock, well planted out; and again success has attended the use of bags of sand where rough rock was not convenient or too expensive.

In such cases it is well to try a mattress foundation, which may be formed of brushwood and small saplings, with butts from ½ inch to 2½" in diameter, compressed into bundles from 8 to 12" diameter, and from 12 to 16 feet long, and well tied with ropes every four feet. Other bundles, from 4 to 6" diameter and 16 feet long, are used as binders, and these bundles are now cross-woven and make a good net-work, the long parts protruding and making whip ends. One or more sets of netting are used as necessity seems to require. This kind of foundation may be well filled in with a concrete of hydraulic cement and sand, and the walls built on them with usual footings, and it is very durable, suiting the purpose as well as anything we have seen or heard of.—*Inland Architect.*

BOOKWALTER'S IMPROVED SEMI-PORTABLE ENGINE.

The accompanying engravings exhibit a new 10 horse power engine manufactured by James Leffel & Co., at Springfield, O. The

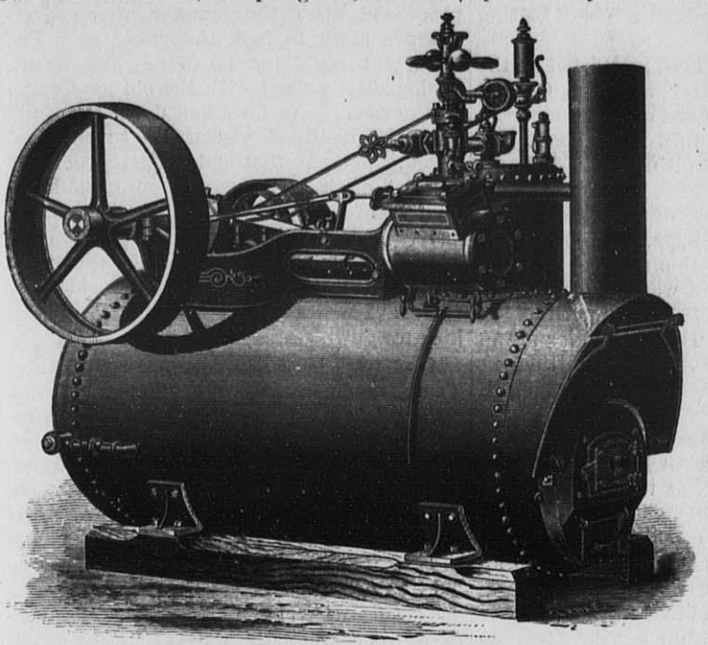

FIG. 1.—SEMI-PORTABLE ENGINE.

main frame or bed plate is cast in one piece, so that all strain comes within it, and it is attached to the boiler in such a manner as to avoid the difficulties of expansion and contraction. The bed is cast with a bottom to catch all the drippings from the engine, keeping the boiler free from them. The cylinder is of exact and through finish, with head turned and polished, and a Russia iron jacket fitted with brass bands. Special care has been bestowed upon the piston head and rings, which are made of the best material and in the most durable form. The guides and cross head are substantially made, the latter being lined with brass; and the connecting rod, which is of wrought iron, is

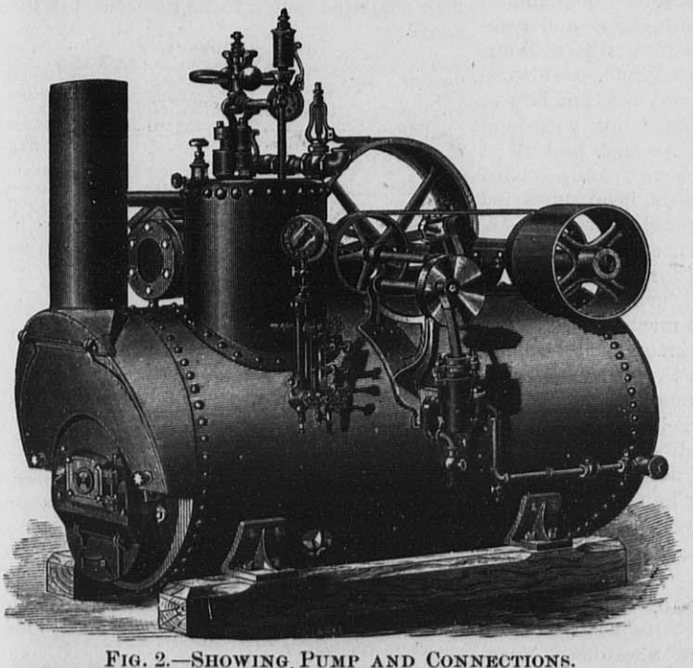

FIG. 2.—SHOWING PUMP AND CONNECTIONS.

provided at each end with brass boxes accurately finished, with wrought straps, keys, self-oilers, etc. Great solidity and strength are secured in the crank shaft, which is steel, of extra size, and has bearings 8 inches long. The steam chest is so placed upon the cylinder that the valves are in a direct line with the driving eccentric on the crank shaft, greatly increasing the symmetry of the engine. To avoid the difficulties of driving the pump from cross head, the method of driving which is now conceded to be the best—namely, by belt—has been adopted. The pump is strong and substantial, with 3-inch brass plunger and 4-inch length of stroke, making forty-eight revolutions per minute. It is fitted with large cup valves of locomotive pattern. Its great strength, accurate finish, and long, steady and slow stroke insure its perfect work. Other noticeable features of the engine are the governor, of the latest and most approved design, the brass pop valve, of locomotive style, the improved patent brass safety valve, 2½-inch brass whistle, and superior fittings throughout, both on engine and boiler.

In Fig. 3 is shown the interior construction of the return flue boiler, omitting the steam dome. It embraces all the desirable features of the common form of return flue boilers, with the additional advantage of having the fire box entirely surrounded with water. This construction gives the greatest amount of heating surface, avoids the difficulties of a fire brick lining, and admits of the boiler being built in a compact and substantial manner. The fire box is circular in form and receives the pressure upon an arch at every point, thus affording the greatest resistance and strength. The shell is made of ¼-inch No. 1 charcoal hammered iron, and the heads of ⅜-inch flange iron; and the best material is used and great care in construction exercised throughout.

The dimensions of the engine are as follows: Cylinder, 7x10 inches; revolutions, 210 per minute; heavy band wheel, 36 inches diameter, 7 inches face; small pulley, 16 inches diameter, 8 inches face. The engine will develop full 10 horse power with sixty pounds steam. The boiler is 42 inches diameter, with twenty-three 3-inch flues, 64 inches long; length of boiler over all, 70 inches; diameter of fire box, 25 inches. The weight of the engine and boiler is 3,800 pounds. Any additional particulars desired may be obtained by addressing the manufacturers at Springfield, O., or 110 Liberty street, New York.

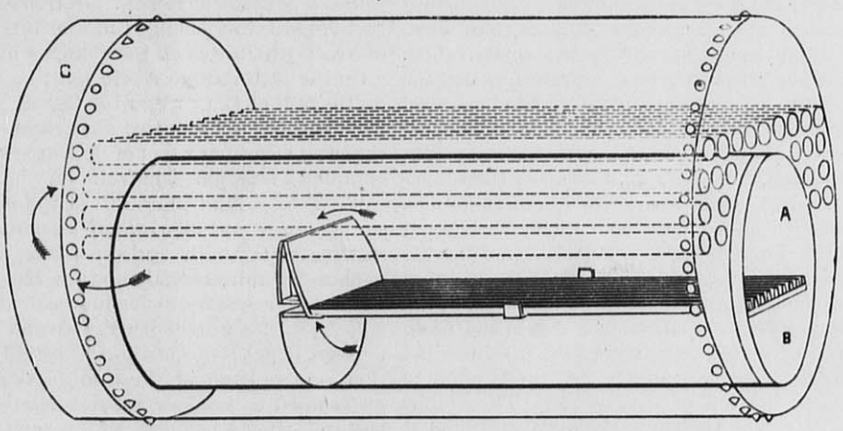

FIG. 3. INTERIOR CONSTRUCTION OF BOILERS.

LABOR IN IRON MILLS AND THE CLAPP-GRIFFITHS PROCESS.

The statements regarding the Clapp-Griffiths process made public by Messrs. Withe-row & Hunt at the New York meeting of the mining engineers, concerning which we commented at some length last week, have aroused the attention of rolling-mill proprietors to an unexampled extent. That steel is destined to supplant puddled iron to a large extent has been manifest to those operating rolling mills for some years. To what extent this substitution has already taken place has from time to time been made the subject of editorial comment by us, and it has been evident to those who have watched the progress of events, that, were it not for two obstacles, the displacement of iron would be much more rapid than at present: First, the large expense that has heretofore been necessary to change an iron plant to a Bessemer plant, and second, the high character of ores and pig iron required by the Bessemer process. The improvements that have been made in the character of the steel produced by the Bessemer process were such as to permit its substitution for iron in many cases. This alone, and the high labor cost of puddled iron, as well as the difficulties in dealing with labor in the iron rolling mills, would long ago have led to the substitution of the Bessemer process, with its cheaper and more easily con-

trolled labor, were it not for this heavy item of expense in construction and the character of the pig iron required. These obstacles the Clapp-Griffiths process has overcome. As stated by Mr. Hunt, a plant can be built for $55,000, producing 80 gross tons of steel a day, and this from a pig iron which, compared with that used in the Bessemer process, is exceeding high in phosphorus, the resulting metal answering all the tests and fulfilling all the purposes for which puddled iron is now used.

But the greatest boon of this process to the rolling-mill man will be that it will enable him to once again manage his own mill, without that imperious dictation in its management which has characterized the Amalgamated Association in dealing with labor difficulties. The Association itself and the men in the iron mills have been warned again and again that it was inevitable that steel should supplant iron, and that their only hope was by concessions to defer the coming of that day. They have not only refused to make them, but have persistently declined to own that there was any danger to their craft from the coming of steel. If they have recognized the possibility of danger they have attempted to meet it by such temporary and illogical makeshifts as demanding a higher price for working a material easier to work in the rolls and heating furnaces, and with which they could produce a greater tonnage than when working iron. These expedients have failed. The hope that they have entertained that the expense of erecting a plant to produce steel would not only require a too extensive destruction of old plant, but too expensive new construction, has been swept away by the Clapp-Griffiths process, and the puddler now stands, as never before, face to face with the inevitable. There is another feature. Among the operations requiring skilled labor about a rolling mill, there can be no doubt that puddling is the most laborious. Again and again in the hundred years since Cort invented the puddling furnace efforts have been made to reduce the toil of the process. The Danks furnace and Dormoy rabble are attempts in this line, but with the exception of the change from puddling to boiling, and some minor improvements of the furnace, the process remains as it was a hundred years ago. The new process will do away with this laborious occupation. Perhaps some of the duties about a converter are as hard as those at a puddling furnace, but in proportion to output not nearly as many men are employed. The future of this process and its effect upon labor will be closely watched.—*Iron Age.*

[Correspondence.]

SUCCESSFUL MILL STARTING.

Editor United States Miller:

In view of the fact that in the past nearly all millers have experienced a great deal of trouble in starting up their mills, almost always expecting to change a large number of spouts and bolting cloth, and be delayed and annoyed for weeks before the mill has got in successful operation, it becomes a matter of interest and news to the miller to read of the successful starting of mills in which no changes are necessary to be made. We believe that nothing will interest millers more than this, and for this reason we give a statement of the successful work of one of our men, who has been employed in the work of starting mills since the 15th of February last. The following is the result of his labors:

On the 15th day of Feb., 1885, he started up the mill for Pearce & Co., at Shreve, O., and ran it four days, obtaining a settlement, and not a spout was changed nor a foot of bolting cloth.

On the 28th of Feb., 1885, he started up the mill for Mr. A. Hulshizer, at Utica, O., and ran the mill five days and obtained a settlement in full. In this mill not a spout was changed nor a foot of bolting cloth.

On the 1st of March, 1885, he started up the mill of J. W. Lumpkins, of Owensboro, Ky., and ran the same five days, and obtained a settlement in full. In this mill not a foot of bolting cloth nor a spout was changed.

On the 9th of March, 1885, he started up the mill for C. W. Ellis, at Dubois, Ind., and ran the mill one week and obtained a settlement in full. In this mill one spout was changed, but no bolting cloth.

On the 28th day of March, 1885, he started up the mill for M. Lynn, at Belden, Ind., and ran the mill one week, at the end of which time he obtained a settlement in full for the mill, and not a foot of bolting cloth nor a spout was changed.

On the 5th day of April, 1885, he started up the mill for Lane, Fuget and Lane, of Tower Hill, Ill., and ran the same five days and obtained a settlement in full. In this mill two feet of cloth was changed at the tail end of one reel, which was all the changes made.

On the 24th day or April, 1885, he started up the mill of L. C. Lillard & Co., at Marion, Ind., and ran the mill two days, and did not change a spout nor a foot of bolting cloth, and obtained a settlement in full.

We give this as the result of the labors of simply one of our men, who is operating and starting up our mills, and as a matter of news, to show the millers that the time has passed when it is necessary to spend weeks and even months in changing bolting cloth and spouts, in order to get their mill in successful operation, and in each of these mills they were guaranteed to produce results equal to the best mills in the country, and in each and all of them, samples were brought in and compared and the results as to quality of flour, yield and quantity of low grade, were carefully compared with the very best and largest mills that we come in competition with, and in view of the fact that, in each and all of those cases, the millers have readily settled within from two to five days, is an indication that milling has been brought down to a science, and that those firms who are able to furnish the proper talent for making out systems of separations, and furnishing the very best and latest improved machinery, are not having any trouble in starting mills, neither need it be necessary that the miller should be annoyed for months and months with changes which interfere, very largely, with the profitable and successful operation of the mill. We give this as a matter of news, and believe it is worthy a place in your journal.

We are very truly yours,

CASE MANUFACTURING CO.

A KIND AND CONSIDERATE CLERK.—When Grant was in Chicago, three or four years ago, he lounged about Sheridan's headquarters a good deal. His son Fred was at that time on Sheridan's staff, but was absent one day, and Grant took his place at Fred's desk and looked after the business. A nervous, fidgety, irritable old fellow came in to inquire for some paper that he had left with Fred. When he stated his case Grant took up the matter in a sympathetic way, and proceeded after the manner of an overanxious clerk to look the paper up. The document could not be found, and Grant, apologizing, walked with the old gentleman to the door. As I walked down the stairs with the mollified visitor he turned and asked: "Who is that old codger? He is the politest clerk I ever saw at military headquarters. I hope Sheridan will keep him." I answered quietly: "That is General Grant." The fidgety old gentleman, after staring at me for a full minute, said, with considerable fervor: "I will give you 50 cents if you will kick me down stairs."

A NEW MATCH-MAKING MACHINE.—Two Troy men have invented a machine which, it is claimed, will practically revolutionize match making. It has been operated to make 24,000 perfect matches in a minute, and its capacity is expected to reach 15,000,000 in ten hours. The veneer of pine wood is fed upon a small platform and passes between rollers, which partly cut it crosswise the width of a match. From the rollers the veneer passes over the abrupt edge of a concave, where the splints are caught by a rubber roller, separated by the action of the roller and rubbed along over the concave so that all the adhering fibre is removed. Then the splints are carried by a chain, from which they are forced into a dipping web or strip of paper. The web containing the splints is then conveyed into a trough, wherein, by the action of a revolving wheel, paraffine is put on the end of each of the splints. When the paraffine is dry by passing through a heated chamber, another wheel, revolving in a phosphorous composition, applies the composition to the ends of the splints, and the webs pass to reels, where they remain until dry.

THE FOUR BIGGEST INCOMES.—The following are the estimated incomes of the four men who are reputed to be the richest in the world:

	Duke of Westminster.	Vanderbilt.
Capital	$ 80,000,000	$175,000,000
Per year	4,000,000	7,000,000
Per month	300,000	676,000
Per day	10,000	15,000
Per hour	450	800
Per minute	7	18
	Rothschilds.	**Mackey.**
Capital	$200,000,000	$275,000,000
Per year	10,000,000	13,750,000
Per month	850,000	1,000,000
Per day	25,000	35,000
Per hour	1,000	1,500
Per minute	20	25

NEW PUBLICATIONS, ETC.

We have received a new catalogue for 1885, from the Webster and Comstock Mfg. Co. of Chicago, Ill., fully illustrating their specialties.

Thanks to Hon. Chas. F. Mills, Secretary of the Illinois State Department of Agriculture, for the most complete state crop report for April we have yet seen.

Harper's Magazine for June is an elegant number, full as usual of beautiful illustrations and interesting reading matter.

We have received a copy of the 1885 catalogue of flouring mill machinery from the Case Manufacturing Co., Columbus, O. It is handsomely printed, illustrated, and contains price list of all machinery, made by the company. Millers will be supplied with copies on application.

We have received from Hon. Alex. Heron, Secretary of the Indiana State Board of Agriculture, a copy of the Report for 1884. It is a very complete report, handsomely printed.

THE WHEAT HEATER.

Just before the introduction of the roller system wheat heaters were "all the rage." They certainly approved themselves to millers; at least those properly constructed enjoyed a large sale, and in the hands of intelligent millers certainly made a difference in the grade of the flour. When rolls came, the earliest convérts had but one article in their creed, which was the potency of rolls to do all that was necessary to make good flour. Wheat cleaning, and along with it wheat heating were largely lost sight of. And a good many millers to-day have forgotten about wheat heaters. Yet they are made and sold and used in roller mills as well as in burr mills.

The philosophy of the wheat heater is that the steam heat puts the bran in a better condition for separation than it is in naturally, and hence enables the miller to make a whiter flour, and a closer yield. The steam heat draws the moisture from the interior of the berry and toughens the bran. The wheat heater performs the same function that wetting the wheat does in Colorado and other western states where the wheat is very dry, and where the bran would inevitably be more or less pulverized if ground without dampening. Of course this toughening process makes the bran less liable to pulverization. Some wheats need this toughening process more than others, and it is more necessary at some times than at others. The months of June and July are about the best months to mill, and the wheat heater gives to the wheat a trifle higher temperature than these months—about blood heat.

If any one doubts the efficacy of steam heat as a toughener, let him heat some wheat quite hot and then put it through a scourer, scouring close enough to remove particles of the bran. He will find that the particles removed are larger than would be taken off on wheat that had not gone through a preparatory process. Of course, the tougher the bran and the less liable to pulverization it is, the whiter will be the flour and this is true both in roller mills and burr mills.—*American Miller.*

THE WEEVIL.—Dr. Harris says that these insects are effectually destroyed by kiln-drying the wheat. The grain that is kept cool, well ventilated, and frequently moved, is said to be free from their attack; also, by winnowing and shifting rice in the spring the beetles can be separated, and should be immediately gathered and destroyed. Curtis states that placing the grain in close cellars is the worst of all proceedings, as the weevils delight in darkness and being undisturbed. He recommends frequently stirring or turning over the heaps of wheat; he also says that the scent of spirits of turpentine or the fumes of sulphur did not appear to incommode the insects. In an experiment tried, the odor of a few drops of cloroform killed both larva and weevil in some closely-corked bottles of samples of wheat in the agricultural department; the same being opened a year afterward retained the scent. Benzine would perhaps have the same effect and be much cheaper, but most probably would also impart a nauseous taste and smell to the grain. Wheat kept in bottles thus treated with cloroform for a week germinated when planted. Curtis says that the larvæ, as well as the weevils, are destroyed at 190 deg. Fahrenheit, but it also scorches the grain; and that a room filled, heated to 130 deg. by hot water pipes, has been constructed in Maderia, which answers every purpose, and wheat subjected to this high temperature vegetated in the ground. He also says that fleeces of wool laid on the grain heaps attract and kill the insects. A larger weevil called the hunter weevil has been much complained of in certain localities as eating the leaves of corn. A very similar insect is found near the Pedee River, in South Carolina, the larvæ of which feeds on the stalks of corn, thereby entirely destroying the plant. The weevils inhabiting nuts, acorns, chincapins, and chestnuts are distinguished by their very long projecting and slender bills or trunks. The egg is deposited in the young fruit and the grubs are found in the interior. The pea weevil destroys the interior substance or future seed, leaves of the pea, seeds of locust, and other leguminous plants. The egg is deposited singly in punctures made by the female on the pod. The larvæ, when hatched, penetrate through the pod and bury themselves in the pea opposite the puncture, where they eat the interior of the pea. About the only certain mode of getting rid of these insects when they once infest rice, grain, or nuts is to sell or get rid of the stuff. The remedy recommended to our correspondent is undoubtedly good, but even that at times may prove ineffectual.—*The American Grocer.*

MILLING PATENTS.

The following list of patents relating to milling interests granted by the U. S. Patent office during the the past month, is specially reported by Stout & Underwood, Solicitors of Patents, 66 Wisconsin St., Milwaukee, Wis., who will send a copy of any patent named to any address on receipt of 50 cents:

Issue of April 28th, 1885.—No. 316,478, metalic grinding plate, E. M. McKee, Batavia, Ill.; No. 316,484, drier, D. H. Rice, St. Albans, Vt.; No. 316,722, grain cleaning machine, H. B. Balk & F. Burtt, Kalamazoo, Mich.; No. 316,756, belting, E. Deming, Middletown, Conn.; No. 316,778, mechanism for brushing flour bolts, M. Harmon, Jackson, Mich.; No. 316,864, machine for silking green corn, J. B. Baker, Aberdeen, Md.

Re-issue No. 10,591, middlings' purifier, F. Prinz, Milwaukee, Wis.

Issue of May 5, 1885.—No. 316,936, grinding mill, J. & W. L. Bell, Decatur, Ill.; No. 319,968, centrifugal flour bolt, H. Heine, Silver Creek, N. Y.; No. 317,094, fanning mill, B. S. Consand, Peru, Ind.; No. 317,220, automatic grain weighing apparatus, C. Scessle, New York, N. Y.; No. 317,278, elevator bucket, M. Babott, J. H. Roberts and C. Banker, Pittsburgh, Pa.; No. 317,412, combined fanning mill and cockle separator, E. Phelps, Hartford Mich.; No. 317,461, apparatus for steaming grain, W. H. Justus, Massillon, Ohio.

Issue of May 12, 1885.—No. 317,527, wheat elevator, P. F. Fleming, Huntsville, Mo.; No. 317,655, grain cleaning machine, H. Lampman, Afton, N. Y.; No. 317,735, grinding mill, P. T. Couch and C. W. Wollbert, Philadelphia, Pa. No. 317,782, grain separator, J. F. Henderson, Menton. Mich.; No. 317,813, grain separator, J. Lucas, Hastings, Minn.; No. 317,827, grain separator, W. H. Mercer, Mercer, S. C.

Issue of May 19, 1885.—No. 318,117, centrifugal crushing mill, F. A. Huntington, San Francisco, Cal.

Issue of May 26th, 1885.—318,519, belt driving pulley, J. L. Stanley, Newark, N. J.; 318,585, grain reducing apparatus, A. J. Williams, Hannibal, N. Y.; 318,624, bag holder, I. B. Jennings, McPherson, Kas.; 318,633, grain bagging apparatus, V. Laplace and E. Laplace, Issoudan, France; 318,674, grain elevator and cleaner, F. M. Williams, Dows, Ia.; 318,677, seed separator, George Adams, Sherburne, Minn.; 318,700, grinding mill, H. H. Coles, Philadelphia, Pa.; 318,704, grain drier, G. H. Diehl, Lake, Ill.; 318,707, belt tightener, M. Dugan, Brandt, Pa.; 318,835, grain separator, Battle Creek, Mich.

TALLMADGE'S ESTIMATES OF GROWING WHEAT.

MILWAUKEE, May 31.—S. W. Talmadge, of this city, has prepared his first preliminary estimate for the season, by States, of the probable total yield of wheat in the United States for 1885.

The figures are made up by States and Territories with the kindly assistance of the State Agricultural Departments, statistical agents, and other reliable authorities, and are based upon the actual acreage sown and present condition of the growing crop.

The estimate shows the probable yield of winter wheat to be 231,000,000 bushels; of spring wheat, 130,000,000 bushels; total of winter and spring, 361,000,000 bushels.

The United States Department of Agriculture officially report the crop of 1884, winter wheat, 370,000,000 bushels; spring wheat, 143,000,000; total winter and spring, 513,000,000 bushels.

From these figures it will be seen that the crop of 1885, compared with 1884, will show a shortage in winter wheat of 139,000,000 bushels; spring wheat, 13,000,000 bushels; total winter and spring, 152,000,000 bushels.

The average wheat yield of the United States for five years past is 461,000,000 bushels. The estimate shows a shortage, compared with the average five years, of 100,000,000 bushels.

The following is a table of the estimated probable yield by States and Territories:

SPRING WHEAT.

	BUSHELS.
Minnesota	37,000,000
Iowa	28,000,000
Nebraska	25,000,000
Dakota	25,000,000
Wisconsin	15,000,000
Total spring	130,000,000

WINTER WHEAT.

	BUSHELS.
California	26,000,000
Michigan	25,000,000
Ohio	22,000,000
Indiana	22,000,000
Kansas	21,000,000
Missouri	18,000,000
Oregon	16,000,000
Pennsylvania	12,000,000
New York	11,000,000
Illinois	10,000,000
Kentucky	5,000,000
Maryland	5,000,000
Tennessee	4,000,000
Texas	4,000,000
Washington	4,000,000
Virginia	3,000,000
North Carolina	3,000,000
Colorado	3,000,000
West Virginia	2,000,000
Georgia	2,000,000
South Carolina	1,500,000
New Jersey	1,500,000
Utah	1,500,000
Arkansas	1,500,000
Alabama	1,200,000
Delaware	1,000,000
New Mexico	1,000,000
Montana	1,000,000
Idaho	1,000,000
Maine	500,0000
Vermont	300,000
New Hampshire	200,000
Mississippi	200,000
Arizona	200,000
Nevada	100,000
Other States	300,000
Total winter wheat	231,000,000
Total spring wheat	130,000,000
Total winter and spring	361,000,00

Accompanying his estimate Mr. Tallmadge presents the following crop reports received from his correspondents within the past thirty-six hours.

With the exception of that of "New York and Michigan" the condition of winter wheat shows little or no improvement.

The spring wheat States show a decrease in area of about 10 per cent, as compared with last year. The condition is favorable, considering the backwardness of the season, and with no damaging weather between now and harvest the yield per acre will be about an average.

RAILWAY AND EXPORT DEVELOPMENT IN INDIA.

REPORT BY U. S. CONSUL ALBERT D. SHAW, OF MANCHESTER.

The policy inaugurated by the Government of India some twenty-three years ago of constructing railways under Government guarantees, and later by direct action, has resulted in largely increased supply to England of cotton and wheat.

Before railways were built the wheat and cotton from the interior could not be transported profitably to the seaboard, and frequently vast supplies of wheat were buried or burned to get rid of it. Now it can be easily sent to tide-water, at comparatively small cost, from many productive regions, and it is the supply of cheap Indian wheat that has chiefly caused the great fall in price in Great Britain during the past year. The agricultural laborers in India are content with from 8 to 9 cents a day, and many of them can live on rice at a daily cost of less than 2 cents. The lands are fertile, and the ryot easily secures a yield of from 9 to 13 bushels an acre even under the ancient and primitive fashion of tilling the soil, which is largely followed. It is claimed by competent authorities that these seemingly rude methods of tillage are, after all, well adapted to the peculiar climate and soil of India, and that experiments made in the hope of introducing European modes of cultivation have not been as successful as was anticipated. The chief difficulty lies in the fact that labor is very cheap, and the native is wedded to old ways, and does not readily take up new and, to him, distasteful methods of tilling the soil. The way of his forefather for ages is good enough for him, and this universal feeling renders much progress on new lines exceedingly difficult. However, the use of modern agricultural machinery is making some headway amongst them, and must eventually become general, when better results will be certain to follow.

The wise and far-seeing policy of the Government of India in developing the country through building railways and other public works is now bearing fruit in the vast and growing volume of wheat and cotton now finding a market in this country (England). If the great increase in quantity keeps up for ten years to come in the ratio it has during the past five years, Indian wheat and cotton are likely to find a market in the seaboard towns in the United States before many years, our duty on wheat to the contrary notwithstanding.

The following data, culled from official sources, will furnish some idea of the development which has attended the policy pursued by the Indian Government, in connection with the products of the soil, during the past twenty-three years especially.

The first Indian railway was built in 1853, or rather the first 20 miles was constructed out of Bombay. Broadly speaking, all the railways constructed in India during the period included between 1853 and 1873, were built by companies to which the Government of India guaranteed 5 per cent. interest. The later policy has been for the Government to construct the lines, except in some few instances where interest at the rate of 3½ to 4 per cent. only has been guaranteed by Government. Up to the end of March, 1883, 10,317½ miles of Indian railways were open, and 2,333 miles were sanctioned and under construction, making a grand total of actual and promised mileage of railways in India at the above date, of 12,650½ miles. These lines of railways have been built with an expenditure as follows:

Guaranteed lines	$496,383,000
State lines	175,194,000
Lines made by native states	14,599,500
Toal cost	686,176,500

The payment of interest on the guaranteed lines and on loans for state lines up to the end of 1882, was $118,255,950 in excess of the revenne from the railways. These heavy payments were however, nearly all made previous to the year 1881. Since that date the Indian railways as a whole have been paying full interest, and in some years have earned a surplus, even including the capital spent on railways which were not yet opened. The present policy of the Government of India is to build about 500 miles of new railway each year for the next five or six years. Two main objects are kept in view in constructing the new railway system: (1) protection against famine; and (2) to develop the natural resources of the country. As to the first consideration, the fear of famine is a great cloud always hovering over the people in remote regions in India; and the wise English heads of the Government there see the power which an easy avenue of reaching every section by good lines of railway, place in their hands. The lamentable mortality of the last great famine in India, where it is estimated 4,000,000 persons perished of hunger, could have been largely averted had there been railway connections between distant portions of the vast empire.

The present policy when fully carried out, will intersect the country with railways so as render impossible any wide-spread ravages from famine in the future. The second object is one of commanding importance to Great Britain, under the controling direction of which India acts. Already great changes have been secured through the increased supply of wheat and cotton from India.

The Indian wheat trade has developed rapidly during the past ten or twelve years, and this surprising increase has been the result of the direct advantages which the Suez Canal provided in the way of quick and cheap freights from india. The heat of the extreme southern trip around the Cape of Good Hope damaged the grain, and the time occupied in making the distance in a sailing vessel, about four months, as well as the heavy cost per steamer, owing to the distance, rendered the risk and expense so great that it was not profitable to send wheat that way. The success of the Suez Canal changed all this, and now the surplus of wheat of India can be laid down in England at a comparatively low rate. The export of India in 1872–'73 amounted to 14,385 tons; in 1881–'82 to 2,993,176 tons. This enormous increase in nine years has arisen from the increased price which new railways and cheap freights to England have secured for the wheat growers of India.

In the report of the Government of India on wheat early in 1884, the area of wheat lands is set down as follows:

	ACRES.
In British territory in India	20,000,000
In native territory in India	6,000,000
Total wheat acreage	26,000,000

The estimated yield from the above acreage is 7,000,000 tons yearly. In addition to the 26,000,000 acres now available for wheat cultivation in India, it is estimated that, with new railway lines, 9,000,000 acres of good wheat lands can be opened in the Punjab alone! A competent authority gives it as his opinion that the wheat lands of India are fully equal in extent to the wheat lands in the United States, and that the rapidly extending wheat area promises a largely increased yield from India at a very low cost.

These facts are important and impressive and should be duly considered by our people, for, as the outlook now appears, the American markets and those of the South American states must soon mainly provide consumers for our American wheat. In discussing and adjusting any future commercial policy in the country, this point should be kept prominently in view.

The opening up of railways in India enabled growers of cotton, as well as of wheat, to cheaply transport their crop to the principal shipping ports, and the improved prices which followed better means of transportation and cultivation, led to a large increase in the production. Much attention has been given to this staple crop by the Indian authorities, and special legislation has been passed to compel inspection of all cotton baled for export. This action, however, did not practically meet the approval of those who were actively engaged in the cotton trade. It was found to be expensive, and that even when officially "inspected" the grade was found uneven and the cotton inferior in quality. The rivalries of business houses engaged in the cotton trade in India have led to a system of doing the work of collecting the cotton from the interior in a fashion that secures perfect grading and careful assorting before it is finally baled at the ocean ports.

The cheap and abundant labor of India enables those who produce cotton to produce it at very low cost. Not only does this apply to the inland points, where farm hands or laborers are employed, but in large seaboard towns also. Coolie laborers will work for from $3.89 to $4.38 a month, and *provide their own food and lodging.*

In remote agricultural districts good labor is obtainable at as low as $2.50 per month, including food, or a little over 8 cents a day! One of the principal articles of diet consists of rice, which is very cheap all over India. The following data will show the steady growth of the exports of Indian cotton since 1878, and it should be borne in mind also that an increased native consumption has taken place during the same period:

	NUMBER OF CWT.
1878–'79	2,966,060
1879–'80	3,948,476
1880–'81	4,541,539
1881–'82	5,627,453
1882–'83	6,168,278

The largest proportion of this Indian cotton is used on the European continent, where, owing to its cheapness, an increasing yearly consumption is taking place. When the cheap rate of wages in India is considered, and the further fact that there are still vast tracts of land suited to the cultivation of cotton to be developed, the outlook is very promising for a greatly increased supply in the near future from this source. The ease with which the cotton crop is cultivated and the abundance and low cost of labor for its manipulation combine to render the crop profitable to

the natives, although the yield per acre is often as low as 50 or 60 pounds! Indian cotton is much in favor on the Continent especially on account of (1) its cheapness, and (2) because the thread spun from it will take on a high polish, thus enabling silk manufacturers to largely use it in imitation of pure silk. In fact so closely can the thread spun from Indian cotton be made to resemble silk that it sometimes takes a good judge to tell the difference.

The value of last year's exports of cotton from all Indian ports was, in round numbers, $78,102,591.

The brief reference made in this report to the development now taking place in India, as well of its past history, is worthy of careful study. It shows how vast the increase in the Indian wheat and cotton supply has been within the past ten years, a direct result of the policy of the Government aid.

New railways, cheap labor, and low freights have enabled Indian producers to come to the front as successful competitors in the principal markets of the world, to such an extent, in fact, that the price of wheat is to-day lower in Great Britain than it has been during more than a hundred years. The wise policy of extending Government aid in building railways, and in liberally supporting new steamship lines to distant portions of the globe is now bringing forth fruit an hundred fold. This is a subject of great importance to the people of the United States, and there are valuable lessons to be learned in a study of the far-reaching policy of the Government of Great Britain, in so far as the aid that the Government extends to the establishing of steamship and railway lines is of commanding importance to all the manufacturing interests of the empire. When it is borne in mind that the present railway system in India is, in the main, under the direct control of the Government, and that it has been developed under its guaranties, as a charge upon the imperial treasury, in case of deficiencies in income, it will be seen that the brave and liberal policy of the rulers in India, seconded by the home Government, has been to develop the productions of the Indian Empire, in order that cheap raw materials may be secured, for Great Britain. Plainly stated, this is a policy of protection to the manufacturers of Great Britain to an extent and in a way few nations have ever fostered their vital industries. This dual policy (1) that of securing the development of far-away dependencies so as to provide a large and cheap supply of raw materials for home use, and (2) at the same time open up new markets for home manufactures covers a field in practical political economy at once vast and comprehensive. It will not be overlooked that new Indian railways call for no end of rails, engines, rolling stock, &c., all of which is sent out from England. With war expeditions almost constantly on the march, calling for immense supplies to keep up the waste of campaigns, with extensive railways and other enterprises fostered by Government going on in India, it is clear to see that all these sources of demand for supplies focussed upon the manufacturers of Great Britain, create a market for the manufacturers of an unprecedented character and in an unfailing volume.

CO-OPERATIVE BAKING.—Inhabitants of London and of other English towns could be charged with no violent precipitation if they followed the example set them in La Rochelle. This French town suffered patiently for a long time the tyranny of the local bakers, who, although buying their flour in a cheap market, continued shamelessly to put a high price upon their loaves. But in 1866 a society was formed to defeat the monopoly of the bread sellers, and it has not only survived to this day, but also grown and flourished exceedingly. About 2,000 families are now said to deal with the association, which is founded, of course, on co-operative principles. The members of the company, for it has been duly incorporated, are only admitted after inquiry as to their respectability, and are at once expelled if they are found to be selling bread to outsiders. The result of the competition is gratifying to the shareholders and interesting to the rest of the world. During the early part of last year, it charged 32 centimes (6 cents) for the kilo of bread, which the bakers sold at 38 centimes; and at a later period of the year the difference was rather more marked. In fine, the small fraction of population belonging to this small town saved 18,000 francs over its consumption of bread. The reason why more members do not join is to be found partly in the fact that the association purposely remains select, but also in the objection which many people have to be restricted to a few sizes only in the loaves they buy. The company bakes nothing but loaves weighing 5 or 10 lbs. each; and it is not every one who cares to adapt the requirements of his household to these inflexible rules.—*English Exchange.*

NONSENSE.

EFFECT OF CULTURE.—Boston Girl (to Uncle James, a farmer).—Do you like living on a farm, Uncle James?

Uncle James—Yes, I like it very much.

Boston Girl—I suppose it is nice enough in the glad summer time, but to go out in the cold and snow to gather winter apples and harvest winter wheat, I imagine might be anything but pleasant.

A DAKOTA BOARD OF TRADE.—A member of the Cleveland board of trade, who was in Dakota last fall, happened in a town on the line of a railroad, which only had one wheat elevator. In conversation with the owner of of the elevator, he inquired:

"Who makes the price on wheat here?"

"Our board of trade" was the reply.

"So you have a board of trade, eh?"

"Well, a good enough one for such a town as this."

"How many members?"

"Only two—myself and clerk; I'm the bear and he's the bull, and between us the market is kept pretty lively."

"But suppose the farmer doesn't want to sell at your figures!"

"That never happens. Being as we are the board of trade, and own the only elevator, and being as he is head over heels in debt, and must have money, the market may be quoted as steady."

At a Keesville, N. Y., burying-ground is this epitaph:

"Here lies the bodies of two sisters dear,—
One's buried in Ireland—the other lies here."

TAKING THE CHANCES.—"I w-want two g-grains of q-quinine and four o-ounces of w-whiskey," shivered a man with malaria to the drug clerk, "an' I'll take it now."

"Isn't that a rather small dose?" suggested the clerk; "you seem to have got it bad."

"I d-don't know but w-what it is. M-make it e-eight ounces of w-whiskey, an' I'll run the risk."

"LOVE you!" echoed the young man; "why I'd walk through the fires of Hades to sit by your side for ten minutes!"

"That's awfully nice. I wish pa loved ma that way."

"Doesn't he?

"Oh, no. She asked him at dinner for a $300 camel's hair shawl, and he made her cry."

"How?"

"Why, he said that, with wheat touching a dollar, and he half a million bushels short on delivery, at 87 cents, she'd better be thinking of calico at six cents a yard. Why, what ails you, Augustus?"

"I, I, that is, I've got to meet a man at sharp 3. Half a million bushels short, eh? Good day, Miss Fairbanks." And he went off kicking himself for not being in love with an ice dealer's daughter.

TOBACCO SMOKE.

Zulinsky has recently published in a Polish medical paper, the result of a large series of experiments on men and animals, made for the purpose of ascertaining the physiological action of tobacco smoke on animals. He has found that smoke is a powerful poison, even in very small quantities. In the case of man, tobacco smoke, when not inhaled too freely, is only deleterious to a limited extent. Zulinsky declares that the poisonous character of smoke is not entirely due to the nicotine which it contains. Tobacco smoke, rendered free from nicotine, remains poisonous, though not to so great a degree as before. The second poisonous principle is an alkaloid, colidin. Carbonic oxide, hydrocyanic acid and other noxious principles are also contained in tobacco smoke. The bad effects of excessive smoking depend very much both on the kind of tobacco consumed and on the manner of consuming it. In cigar smoking the greatest amount of poison is inhaled, in cigarettes, much less, in pipes still less, while those who indulge in the nargileh or any similar luxury, where the smoke is drawn through water, take tobacco in its least mischievous form. Such are Zulinsky's conclusions. There can be little doubt that many of the light colored tobaccos have been partially bleached in order to give them that pale tint which moderate smokers believe to be an infallible indication of mildness. The decoloring agent is suspected to be, in many cases, a deleterious chemical compound. Some of the light tobaccos smoke exceedingly hot, owing to the quantity of wood fibre which they contain. This is especially the case with "bird's eye," which is cut near the stalk of the leaf, the slices of the mid-rib thick in this part of the leaf, giving this variety of tobacco the characteristic appearance from which it derives its name. "Bird's eye" is very apt to cause slight inflammation of the tongue, on account of the irritant character of and heat of its smoke, and, together with other light tobaccos, must act very prejudicially in elderly smokers, who may be prone to cancer of the tongue or lip. Dark tobaccos are readily adulterated, but when pure they are probably the most wholesome for pipe smoking.—"*N. Y. Analyst.*"

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ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Mille," 69 Mark Lane, and* HENRY F. GILLIG & Co., *449 Strand, London, England, are authorized to receive subscriptions for the* UNITED STATES MILLER.

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

☞*The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.*

TO ADVERTISERS.

Milwaukee, Wis., June 1, 1885,

To Those Interested in the Flouring Trade:

THE UNITED STATES MILLER is now in its tenth year, and is a thoroughly established and much valued trade paper. It has a large regular list of domestic and foreign subscribers. It is sent monthly to United States Consuls in foreign countries, to be filed in their offices for inspection by visitors. It is on file with the Secretaries of American and European Boards of Trade for inspection of members. Aside from the above, thousands of SAMPLE COPIES are sent out every month to flour mill owners who are not subscribers, for the purpose of inducing them to become regular subscribers, and for the benefit of those advertising in our columns. Every copy is mailed in a separate wrapper. Our editions have not been at any time since January, 1882, less than 5,000 COPIES each, and are frequently in excess of that (see affidavit below). We honestly believe that the advertising columns of the UNITED STATES MILLER will bring you greater returns in proportion to the amount of money invested than any other milling paper published. Advertisers that have tried our paper for even a few months have invariably expressed themselves well satisfied with the results. Our advertising rates are reasonable. Send for estimates, stating space needed. The subscription price of the paper with premium is One Dollar per year. Sample copy sent free when requested. We respectfully invite you to favor us with your patronage. We shall be pleased to receive copies of your catalogues, and also trades items for publication free of charge. Trusting that we may soon be favored with your orders, we are,

Yours truly,
UNITED STATES MILLER.
E. HARRISON CAWKER, *Publisher.*

Affidavit Concerning Circulation.

STATE OF WISCONSIN, } ss.
MILWAUKEE COUNTY. }

E. HARRISON CAWKER, editor and publisher of the *United States Miller*, a paper published in the interest of the FLOURING INDUSTRY, at No. 124 Grand Avenue, in the City of Milwaukee, and State of Wisconsin, being duly sworn, deposes and says that the circulation of said paper has at no time since January, 1882, been less than FIVE THOUSAND (5,000) copies per month; further, that it is his intention that it shall not in the future be less than FIVE THOUSAND copies each and every month; further, that he has paid for regular newspaper postage at the rate of two (2) cents per pound on domestic and Canadian newspaper mail for the years 1883 and 1884 the sum of $423.74, showing an average of $17.65 per month for 24 months; the average weight of domestic and Canadian mail being 882½ pounds per month and the total number of pounds of such newspaper mail sent out during the 24 months ending with December, 1884, being 21,180 pounds. Six copies of the U. S. Miller weigh about one pound. The above postage does not include postage paid on local or foreign papers, Canada excepted.

E. HARRISON CAWKER.

Subscribed and sworn to before me this 7th day of January, A. D. 1885.

G. MCWHORTER.

Justice of the Peace, Milwaukee, Co., Wis.

THE New Orleans Exposition will not be continued another year.

THERE were fewer fires among flour mills in May than in April.

THE dust collector patentees and manufacturers seem to be at loggerheads with each other just at present.

IT is rumored that an immense scheme is on foot for building a complete system of railways in the Chinese Empire.

THERE are no present indications that the Millers' National Association will hold a meeting for several months to come.

PROF. RILEY says that the 17-year locusts will certainly appear this year. The Hessian fly is doing some damage in Missouri.

HON. GEORGE BAIN, Ex-president of the Miller's National Association, has been appointed one of the judges of milling machinery at the New Orleans Exposition.

WM. FAIST, representing Edw. P. Allis & Co., has gone to Europe, to be absent for a lengthy period. It is probable that he will return, via South America, sometime next year.

WE hereby respectfully thank our exchanges and patrons for the kind compliments they have showered on the UNITED STATES MILLERS on account of its change in form, and general appearance.

THE Jonathan Mills Universal Flour Dresser, manufactured by the Cummer Engine Co., of Cleveland, O., is meeting with good success in various parts of the country. The company report numerous orders.

WE take pleasure in advising any of our readers desiring to enjoy a good day's fishing to visit John Robert's summer resort at Neenah, Wis., on the Wisconsin Central Railway. Everything that a gentlemanly fisherman desires can be found there. We have been there ourselves, and are going again.

THE Wisconsin Central has commenced the shipment of flour and grain from St. Paul and Minneapolis to the Atlantic seaboard, via its own line, the Green Bay, Winona and St. Paul to Green Bay, the Delaware and Lackawana, boat line to Buffalo, and the Lackawanna rail line from thence on. The first shipment by this route, made May 16, was one of 25 carloads, and a like shipment will now be made daily.

HON. CARL SCHURZ, in his recently published pamphlet, entitled "The New South," says that he found on all sides, "a high appreciation of the resources and advantages of the country; great expectations of future developments; a lively desire to excite interest in those things, and to attract northern capital, enterprise an emigration; a strong consciousness and appreciation of the importance to them of their being a part of a great, strong, prosperous and united country."

PROF. RILEY says the seventeen-year locusts, whose visit he has predicted, are harmless to growing crops and do no injury except to the twigs of forest and fruit trees. Wherever young orchards have been planted on land which has been cleared during the last seventeen years the trees are liable to suffer somewhat, but it is probable that kerosene spray upon the trees will protect them. The ordinary locust, which is so destructive to growing crops, has jaws which cut, while the seventeen-year species, more properly called the cicada, has only a beak, through which he sucks his nourishment.

The Mexican Government has permitted the garrison at Vera Cruz to be vaccinated with yellow fever virus according to Dr. Carmona's system. Experiments were first made on prisoners who volunteered for the purpose. Persons vaccinated with the virus have all the premonitory symptoms of the fever. It is thought that the inoculation will serve as a complete protection for four or five years.

GRANT'S COOLNESS IN THE WILDERNESS FIGHT.—Colonel Amos Webster says: I've seen General Grant in the most trying places, but he never showed the least sign of discomposure. Once, during the terrible fighting of the Wilderness, he was sitting on a log on a knoll, in the rear of the line, with his back against a tree. He had his knife out and was whittling a stick. Suddenly an aid dashed up in a state of great excitement. His horse was in a lather, his sword was out, and he had lost his hat. He reported, in excited language, that a gap had been broken in the line, and the rebels were pouring through it. The old man heard him clear through, dismissed him, and then said quietly:

"One of you go over there and see what's the matter."

GRASSHOPPER YARNS.—Since the invasion of Northern California by the grasshoppers, there has been a marked revival in the literature appertaining to this interesting insect.

"I remember in '71," said a member of the Grain Exchange yesterday, "I was coming accross the plains. Well, sir, I was seated in a car reading a newspaper about noon, when suddenly it grew quite dark, and I thought sure a terrible storm was on us. It was a cloud of grasshoppers; so thick that when they settled on the car track they stopped the train. There was good feed where we were just then, and it brought the 'hoppers to a halt. We were blocked for twenty-four hours, until a snow-plow was telegraphed for, and when it cut the way for us, it left a bank of 'hoppers on each side higher than the smokestack of the locomotive."

"That was pretty bad," said another broker, "but I have seen worse. We were camped one summer in Kansas, making survey for a new town. The 'hoppers struck us at night, and in the morning we thought the end of the world hade come. They were piled, sir,

twenty feet deep over our encampment, and we were nine hours tunneling out of them. If we did not happen to have a few giant powder cartridges to blast out air holes we should have been suffocated before we could have struck a shovel into the mass."

"Didn't you hive any of 'm?" inquired a warehouseman, who had seen a good deal of Western life.

"What do you mean?" asked the broker.

"Just this: I was caught in the same fix you have told about, once, in Kansas. I was in charge of a mule team, hauling supplies to a railroad camp. Among other things we had several thousand yards of canvas for tents for the men. As soon as the grasshoppers struck us I put my gang to work, and in a short time we had a canvas sack made, balloon fashion, only bigger than any balloon you ever saw. Well, sir, we filled it chock full of hoppers—live hoppers—and hitched it on to the wagon, and when the swarm started to go our caged hoppers went with them."

"And took off your balloon?"

"No, siree, they hauled our wagon for over seventy-eight miles, when they broke down and we bagged a new lot. It beat mule power all hollow. Then it has occured to me—" But his audience had gone, and the Western man, growling, "I suppose these darned fools think I'm green," walked off to find a more credulous and attentive auditory.—*Alta California.*

The *Cincinnati Price Current* says: There are many curiosities of burning, of extraordinary rapidity of combustion, worth detailing. Bad building is the cause of most, for bad building means rapid destruction by fire. The party wall in the majority of old houses built in a row, and in many new, does not reach to the roof as it should, and the space between creates a channel—almost a blowpipe—for the spread of the fire to the next, which is very difficult to deal with. It is known that a nine-inch brick wall will resist fire as long as it stands—but often through carelessness it is overlooked. A building with a large frontage of windows—a large shop, for instance, with show rooms on each floor—is one of the most dangerous. The glass soon cracks and falls out and the air rushes in, and the whole soon becomes one vast blast furnace. Perhaps the most dangerous of all are those lofty establishments of flats. There is no one spot in them free from or unlikely to catch fire for they are collections of private houses, as it were, and every part of a private house is equally vulnerable, and from their great height there are neither ladders long enough nor water jets powerful enough to reach the top stories.

THE FASCINATION OF GOLD HUNTING.—An old forty-niner says of gold hunting: "It's the fascination of it. Lor', man, when you've struck it pretty rich and can see yer gold right in front of yer; when you're piling it up every half hour o' the day, with a nugget now and again as big as a bullet to cheer you, and then when the evenin' comes and you count it up and find a hundred odd dollars just picked out o' the earth that day—well, there ain't nothin' like it. Then when you don't strike it rich you always think you're goin' to next day, an' it's just as excitin' hearin' what other men tell in the evenin' what they pulled out as it is countin' over your own. Why, I've been three or four months at a time without making a dollar and without a cent in my pocket; but geewhittaker! the excitement of it don't give a man twice to think how hard up he is."

A CITY ON WHEELS.

One of the most curious of cities consists of wooden huts on wheels, to the number of about one hundred and thirty, which, when the season arrives, are rolled on to the ice in Saginaw Bay, Lake Huron. The population of this "city without a name" is about five hundred. Each hut is furnished with cooking utensils, hammocks, and a stove, and is occupied by three men, whose business on the ice is to follow up a peculiar method of fishing. In the centre of each hut a hole is dug to the water about a yard square. One of the fishermen then takes a live fish of the herring tribe, and after fastening it to a piece of pack thread drops it into the water. The fish dashes away swift as an arrow until it is pulled up by the thread, when it returns toward the hole, followed by a host of pike and other large fish desirous to feast on the dainty morsel. Beside the hole stands the fisherman, harpoon in hand, waiting the arrival of the pursuers, who are received with thrusts of a four or five pronged instrument, which rarely fails to bring up some writhing victims. Some huts can show two hundred and upwards of fine fish at the end of the day's work. The most weird appearance of this city is at night, when the fishermen prosecute the work by the light of torches, which, as is well known, attract fish without the aid of the herring-bait. The glancing torches and the shadows of the men leaning over the holes make a strange spectacle. If fish are not abundant in the spot first chosen, the huts are wheeled to another site. This city of fishers is about ten miles from Bay City, and six miles from the mouth of the Saginaw river and the banks of the lake. The road thither on the ice is much frequented, not only by those who have business there, but also by the curious, who find their interest in the excursion enhanced by the magnificent course for sleigh-driving which the ten miles of ice present.

RESULTS OF FREE TRADE.

A speaker in the Kensington Parliament recently introduced in his speech the following amusing account: "Yesterday morning I rose early. My hot water was brought in a Belgian zinc jug; and, as is my wont, I worked half an hour in my garden with a Belgian fork and an American hoe. I then took off my French boots, put on a pair of Algerian slippers, and went into breakfast, which consisted of bread made from Odessa wheat, Normandy butter, Russian chicken, grilled, American bacon, French eggs (poached), Mocha coffee, and Swiss milk. Comparing my Geneva watch with the American clock, I found it was time to set forth; so I put some American tobacco into a French pipe, and having lighted it with a Swedish match, I went to the railway station, with its Belgian iron framework, from which a German engine drew me to the city over rails made in Belgium. Here I worked for four hours with an American stylographic pen, and then went to luncheon—American wheat-bread, butterine from Canada, Australian mutton, Swiss cheese, Vienna beer; the knives were American and the waiter was a Swiss. I consoled myself with a Havana cigar, and continued my toil. In the meantime I dispatched a box to a friend, closing it down with French nails, and further securing the same with Russian cordage. My friend was advised on Belgian paper. Through stooping, I found I had lost a button, which was promptly replaced by a Dutch one. At seven I prepared for dinner by drinking half a glass of Spanish sherry with Dutch bitters. My dinner was made up of Portugal oysters and Chablis, *concomme* soup, which came in a powder from France, tinned *entrees* from the same country, Norwegian hare, Swedish blackcock, American beef, and Belgian potatoes, Italian cheese, and French wine; a trifle of Chartreuse and a Manilla cheroot followed, and a cup of East Indian coffee brightened me for my journey home. Arrived there, I entered by opening an American lock, which was on a Swedish door. To please my wife, I bought her a box of Dutch confectionary and a French-straw bonnet, and for my little girl a German toy. Here I found my wife playing German music on a French piano, with a French shade on the lamp. I took out my Italian violoncello, and having applied some fine French resin to my new Leipsic bow, played for some time with her. Abruptly breaking off, I told her my adventures during the day in much the same language as above. She grew excited, being a Fair Trader, and assured me that, though men might have such experience, the case was different with women. I replied by reminding her that she got her bonnet, silk for dresses, trimmings, ribbons, lace, gloves, boots, and most of her clothes, from France, mantles from Germany, her hair from Russia, and her teeth from America. We got to high words; so, putting on my French boots and gloves, seizing my Malacca cane and French-felt hat, I left the house, hailed a hansom with a pair of American wheels, and spent the rest of the evening at the French plays. Going home in an American tramcar, I arrived, to throw myself in an American chair, whence I noticed a great blot of ink on my new French wallpaper. Ere retiring, I partook of some Belgian rabbit, curried, washing it down with brandy-and-water, sweetened by French refined sugar. Finally, I reposed on a bedstead of the same nationality.

AN AWFUL BLUNDER.—Here is a good story anent Sir Edward Thornton, for which the London *Pall Mall Gazette* vouches: At a Washington reception a young gentleman said to a rather imposing-looking man: Good evening! Glad to see you—we have not met since we parted in Mexico." The person thus spoken to coldly replied: "I fear you have the advantage of me." "Why, surely!" exclaimed the mortified young fellow; "you don't seem to remember me." "To tell the truth, I have never been to Mexico." "Are you not Sir Edward Thornton?" "No, I am Judge Poland, of Vermont." A few nights after this rebuff the young man happened to be at another party, and seeing the Judge, made up to him. After a little desultory conversation he ventured to say: "That was an awful blunder of mine the other evening, to take you for old Thornton." "And whom do you take me for now?" "Why, you told me you were Judge Poland, of Vermont." The reply was crushing—"On the contrary, sir, my name is Thornton."

IMPROVEMENT IN FOOD PREPARATIONS.

The progress and improvements in all useful and beneficent institutions and industries of the nineteenth century have been greater than during any one of the preceding cycles.

A brief synopsis of labor-saving machinery, the means of locomotion--both by sea and land; the construction of ships and dwellings; the utilization of steam and electricity; the transmission and communication of intelligence; warming and lighting of dwellings; the production of material for clothing, and machinery for manufacturing the same, and a thousand and one other useful improvements suggested by these would fill a volume. But this paper will form merely an index to the improvements of a few articles of food preparations; for discussions relative to the preservation, sale and use of food, are more in keeping with a periodical devoted to the interests of the grocery trade, than the numerous means utilized to produce and transport them.

During the early recollections of the writer, no one had suggested any means to prepare fish, flesh, or fowl for future use during long voyages on the sea or protracted journeys by land, except by salting or drying. So destructive to the best qualities of fish and flesh has salt always been, that no human being has long escaped scurvy or other diseases who has made salted flesh or fish chief articles of diet. Smoked and dried meats also, seemed fit for only semi-savage life. Green and fresh vegetables have always been indispensable to a constant use of dried meats. During our juvenile readings of Capt. Cook's voyages, and the sickness and failing strength of many who made excursions and long journeys in both arctic and equatorial regions, the causes of their weakness and sickness were not then apparent; but now every well-read school boy knows that had these voyagers been provided with suitable food such as is now abundant, they would have enjoyed even better health than ordinary landsmen, of the same vigor, for as soon as our strongest men are compelled to subsist on salted, dried and stale fish and meat, and old, stagnant and impure water, they, too, become weak and diseased.

Years and generations were allowed to pass away, even after it was known that pure water could be distilled from any part of the ocean, before even packet ships were supplied with the means of providing this most essential element to the enjoyment of life and health on the ocean. Water casks and tanks were filled and kept in ships' holds until too stale and stagnant for human use. No wonder that every ordinary seaman in those days formed an appetite for "grog"—composed of equal parts of rum and water! But grog three times a day would not save a man from scurvy while his staple food was stale hard tack and salt junk, terms by which the sailor designated this stale bread and meat. Even vigorous soldiers on a long march, often break down when kept some time on improper food. Men need and must have food adapted to the season and the climate in order to enjoy health and vigor. General Scott said that the American army under his command lost more men in the Mexican war, by being fed on navy beans and other stale food than by all the weapons of their enemies.

For generations a few scientific men knew that a great variety of food, if excluded from the ordinary atmosphere, would remain fresh and pure; but no one gave practical demonstrations of these known facts so that the masses could utilize them. For years a few thoughtful persons made soups, jellies, teas, etc., and poured them into small stone bottles, and while hot carefully corked and sealed the vessel, and derived great benefit from such preparations during long voyages. But it remained for a few plain utilitarian Yankees to make a business of canning corn, fish, meats --indeed food of every kind--in a manner so secure and easy to handle and transport, that persons of the most limited means can now enjoy, in season and out of season, every variety of fish, flesh, fowl and vegetables in its fresh and natural condition, possessing all their original and necessary qualities; and that too, anywhere in any climate and season. Even milk and cream, that we find difficult to keep sweet and fit for our coffee twelve hours during the summer, are readily so condensed and preserved that they can be opened, with their contents sweet and good, even within the torrid or frigid zones, after being tossed about from pillar to post for full seven years. During the civil war pure condensed milk, from the vicinity of Chicago, was abundant in all our southern hospitals, and when properly handled answered every purpose of milk, just from the cow. And so of every kind of food. Now the British government may, if she will, supply her armies hastening to the barren sandy plains of Africa, with every kind of animal or vegetable food, in packages so condensed and preserved that every reasonable want of strong or weak men may be supplied; and that, too, at an expense but a trifle in advance of what the same quality of food could be had at home and all this by the genius, skill and industry of Americans.

In the wilds of the United States a company of prospectors who would seek for gold and silver in the districts beyond the reach of food, have but to load their mules with a few cans of food, and then they can travel over mountains and through uninhabited valleys, and be always confident that their cans will yield all that their labels promise.

Had our Arctic voyagers been well supplied with these excellent goods, scores of valuable lives would now have been blessing their country and their families, instead of being buried among the icebergs.

All the means and machinery for fully perfecting the entire system of canning food and drink of all kinds, so that they can be full, wholesome and good for an indefinite period, are constantly being improved. The competition is among men of brains, genius, skill, energy, enterprise and wealth, and the *ultima thule* will certainly be reached at the earliest period possible.—*Chicago Grocer.*

JAGO'S STANDARD COLOR SCALE FOR TESTING THE COLOR OF FLOUR.

Men know things by comparison. Some standard is set up either naturally or arbitrarily, and whether a thing be greater or less, sweeter or sourer, darker or lighter than that standard, so we judge of it. The standard is the guide which directs our judgment and forms our knowledge. Comparison enables us to measure our progress. A baker counts up the number of sacks he baked this year, or the number of Good Friday buns, against the number of last year, and so he measures his success. In such matters as numbers made, it is easy to compare, but in such questions as the color of his buns, unless he has kept one in the same state as when new, he can only form a rough opinion. If he could have one of his last year's buns, just the same color as it left the oven, then he could compare, but not otherwise.

Now in flour nothing is so deceptive as its color, nothing so difficult to accurately remember, from month to month, from purchase to purchase. Here Mr. Jago has stepped in, and provided, at a cheap cost, a color scale which will enable any baker to test in the most accurate manner his intending purchase with his last delivery. The description of the inventor, which he sends out with each scale will give some idea of its value and appearance.

DESCRIPTION.—The usual method of determining the "Color" of a sample of flour consists in compressing a small quantity into a thin cake or slab, wetting the same and allowing it to dry. The depth and character of the color are then observed.

In using this method, the inventor has long felt the need of some definite color standard with which the flour under examination could be compared, and, if possible, the result expressed in numbers.

Flours differ, not only in depth of tint, but also in actual color. For most purposes of comparison they may, however, be divided into two varieties, the prevailing tones of which are respectively gray and yellow. The greater number of flours fall into the gray class, while a few of the very finest patents, represented notably by the best Hungarian brands, have a rich yellow tint.

It occured to the writer that the best method of meeting the want mentioned would be to construct a scale of graduated tints that should be numbered according to their intensity. The scale might then be suitably mounted in any convenient form. Such a scale would require to be made of colors that do not bleach or undergo change on keeping, the tint should as closely as possible resemble that of flour, and the character of the colored surface should resemble that of flour after being wetted and dried. The writer believes that, as the result of many months' work and experiment, he has succeded in producing a scale that satisfies these requirements.

The colors selected are—first, a grayish yellow and, second, a purer yellow tint. A scale of each color is constructed: they are termed the Gray and Yellow Scales respectively. The Gray Scale starts with a very light tint marked "1" and finishes with a dark tint marked "16." The whole of the tints have an intensity proportional to their number, thus number 2 is exactly twice as dark as number 1, while number 8 is four times as dark as number 2.

The Yellow Scale being intended for patent flours only, is not extended so far as the Gray Scale. It is difficult to compare the two scales with each other, because the color is dissimilar, but, in intensity, Number 1 Yellow is about equal to 1½ Gray; Number 10 Yellow is three times as dark as 1 Yellow and about equal in intensity to 4½ Grey. The colors deepen in intensity by regular intervals from Number 1 to Number 10 Yellow.

In the mounted scale, which is of a convenient size to fit the pocket, the Grey

Scale faces the cover, while the Yellow is placed underneath.

DIRECTIONS FOR USE.—To wet up a sample of flour, place a small quantity on a piece of thin board, or a plate of zinc, or other convenient substance; press carefully with a spatula or other body capable of giving the flour a smooth surface. Having thus obtained a smooth compact cake of flour, dip the same in a sloping direction into water; after some ten or twelve seconds withdraw, place aside, and allow to dry at the ordinary temperature.

If preferred, the sample may be doughed under conditions of absolute cleanliness, and the color of the dough noted after drying as before.

Color is best observed in good daylight, direct sunshine on the samples being avoided. Stand in front of a window, hold the scale and the sample side by side, and inclined at the same angle to the light. The scale must be held in the same direction as a book, that is with the darkest end or bottom of the scale to the observer. First determine whether the flour corresponds more closely to the Gray or Yellow scale; then, by careful observation, ascertain the numbered tint which agrees with the flour in depth of color. Should the sample fall between any two tints, indicate the color by a fraction, as for instance, 2¼ or 3½, estimating the fraction by the eye.

It is recommended that two scales be procured, the one for use in examining flours, the other to be kept for a "master" scale, and only used for testing, from time to time, the accuracy of the working scale. This scale, on being sensible soiled, should be replaced. —*British Baker and Confectioner.*

THINGS WORTH KNOWING.

COCAINE A NERVE FOOD.—Dr. Aschenbrandt, of Wurzburg, has made some experiments on the action of murate of cocaine on the human organism. He administered the drug, unknown to the subjects (who were soldiers), in doses about one sixth of a grain in cases of exhaustion and fatigue from various causes, and found invariably that the lassitude was speedily removed, and that the men could go on for hours without feeling hunger and thirst. One of his experiments was made on himself after a sleepless night, with the prospect of a long day's march before him, when a dose of cocaine (taken in coffee about 3 A. M.) enabled him to go the whole day without feeling hunger, thirst, or fatigue, and he dined late in the afternoon with his usual appetite. He considers the drug to be a direct nerve food, and not a stimulant merely; but its stimulating action is certainly far above that of alcohol, and it appears to have no injurious after affects.—*Medical Record.*

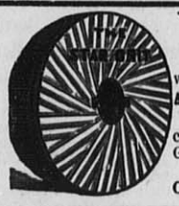
OLD WOMEN'S REMEDIES.—A writer in the St. Louis *Medical Journal* advises young practitioners never to make fun of an old woman's remedy. He will not only give offense, but may miss a valuable aid in his practice. The writer adds: "In 1830, while practicing in Madison county, Ill., I was induced, by the representations of an old woman, to make the trial, in dysentery and diarrhœa, of tablesponful-doses of pure cider vinegar, with the addition of sufficient salt to be noticeable, and it acted so charmingly that I have never used anything else."

ARTIFICIAL SPONGE, made of cotton, rendered absorbent, and treated with antiseptics, has been invented in England, at Birmingham. A piece of the size of a walnut has absorbed water until it reached the size of a cocoanut. It is so cheap that it need not be used but once, so that sponge infection can be readily avoided.

IRON vs. WOODEN SHIPS FOR GRAIN.

Mr. Henry Taylor, who had personal experience in ocean shipping from 1866 to 1879, replied in the Chicago *Tribune* to an article of Mr. Bates, giving the preference to wooden vessels, as compared with iron, as grain carriers. The writer says that the value in the market of cargoes in A1 all iron vessels is twenty-five cents per quarter over the same in all wood. The great danger of damage in the latter is well known to the shippers of the Pacific slope.

A first-class iron vessel, says Mr. Taylor, can, he thinks, be built on the Clyde for less than a wooden one of even tonnage, either on the Pacific or Atlantic coasts. The iron ship would be classed as A1 for twenty years; the wooden one would be so classed only for seven, in a few cases for ten or fourteen years; after these dates few would risk a cargo around the Horn. Iron ships make fully as good time, or a better average; while underwriters would not insure a grain cargo in a wooden vessel of seven years at as low a rate as in one of iron of double that age.



WATER WHEELS AND MILLSTONES.
Best and Cheapest in the world. Manufactured by A. A. DeLoach & Bro., Atlanta, Ga.
Every farmer can now afford a Grist Mill.
Sixty-four page Catalogue free.

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With the proper amount of money addressed plainly to E. HARRISON CAWKER, Publisher, No. 124 Grand Avenue, Milwaukee, Wis. Remit by Registered Letter, Postal Note, Post Office Money Order, Express Money Order, or Draft on New York, Chicago or Milwaukee. Read our Combination offer carefully, and also our Book List.

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CAWKER'S

AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884-85.

Published by E. HARRISON CAWKER, of Milwaukee, Wis.

$10.00 Per Copy or Three Copies for $25.00.

Sent by Mail, Registered, on Receipt of Price, to any Address in the World.

No pains or expense have been spared to make this Directory as complete and accurate as possible. More than 30,000 circulars and innumerable letters were sent out to obtain information necessary for the compilation of this work. The volume contains over 200 large pages, no advertisements. It shows that there are in the United States of America and our neighboring Dominion of Canada 25,050 flouring mills, taking them as they go, great and small. The work indicates in about 9,000 instances the kind or kinds of power used by the mills, the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows that the number of mills in the various states and territories of the United States are as follows: Alabama 453; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 28; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 386; Missouri 1025; Montana 21; Nebraska 25; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 32; New York 1902; North Carolina 848; Ohio 1443; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 730; Utah 110; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777, Wyoming 2.

In the Dominion of Canada the record is as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,050.

Anyone desiring to reach the flour mill trade of the United States and Canada will find this Directory indispensible. Cawker's Flour Mill Directories are issued once in two years. The next will not be issued until about March 1st, 1886. We refer to the following list of Parties using this Directory:

E. P. Allis & Co., Milwaukee, Wis.; C. B. Shove, Minneapolis, Minn.; Three Rivers Manufacturing Co., Three Rivers, Mich.; R. A. Danliker 63 S. Clinton St., Chicago.; Smith Bros. & Co., Three Rivers, Mich.; Everlasting Elevator Bucket Co., Terre Haute, Ind.; Geo. T. Smith Middling Purifier Co., Jackson, Mich.; Thos. Nixon & Co., Dayton O.; Latimer & Co., 33 N. Front St., Philadelphia, Pa.; Home Insurance Co., 116 Broadway, N. Y.; T. R. Burch, Gen'l Agent Phœnix Ins. Co., 164 Dearborn St., Chicago.; J. Ward Palmer, 426 Walnut St., Philadelphia.; Pratt & Whitney Co., Hatford, Ct.; Howes & Ewell, Silver Creek, N. Y.; Cockle Separator Co., Milwaukee.; North Star Iron Works, Minneapolis, Minn.; Knickerbocker Manufacturing Co., Jackson, Mich.; Bradley, Kurtz & Co., 25 Pearl St., New York.; Stephen Ballard & Co., 79 Chamber St., N. Y.; H. Henry, Shelbyville, Ind.; A. W. Haag & Co., Fleetwood, Pa.; D. L. Van Moppes, 27 Maidne Lane, New York.; Handy & Lord, Northfield, Minn.; Arkell & Smiths, Canajoharie, N. Y.; J. W. Supplee & Co., 1831 Market St., Philadephia.; Chas. E. Slayback, 58 Magazine St., New Orleans, La.; John W. Higley, Mobile, Ala.; Field, Lindley & Co., 17 South St., New York.; Youngblood & Hall, Atlanta, Ga.; Quinn & Co., Milwaukee.; Poole & Hunt, Baltimore, Md.; R. P. Charles, New York, N. Y.; Shields & Brown, 78 Lake St., Chicago, Ill.; M. Dea & Co., Bucyrus, O.; H. & W. Gregg, 45 Waring St., Belfast, Ireland.; C. M. Palmer, Minneapolis, Minn.; Wall Manufacturing Co., Minneapolis, Minn.; Wm. Dunham, 24 Mark Lane, London; E. C.; Mitchell Bros., Chicago, Ill.; Eureka Manufacturing Co., Rock Falls, Ill.; Sinker, Davis & Co., Indianapolis, Ind.; American Fire Insurance Co., 175 La Salle St., Chicago, Ill.; Wilford & Northway, Minneapolis, Minn.; Cummer Engine Co., Cleveland, O.; E. F. Bacon & Co., Milwaukee.; Richmond City Mill Works, Richmond, Ind.; E. Holmes & Co., Minneapolis, Minn.; L. V. Rathbun, Rochester, N. Y.; W. & N. Thayer, Westerville, O.; A. A. DeLoach & Bro., Atlanta, Ga, Peterson Bros. & Co., 90 La Salle St., Chicago, Ill.; S. Dessau, No. 4 Maiden Lane, New York.; Hill Grain Scale Co., Detroit, Mich.; Chatfied & Woods, Cincinnati; O.; Phœnix Iron Works, Minneapolis, Minn.; Western Electric Light Co., Chicago, Ill.; O. E. Rickerson, Quincy, Ill.; Fred. J. Schupp, Marshall Mo.; Jno. E. Crow, Wilmington, N. C.; A. R. Ennis, 107 N. Eight St., St., Louis, Mo.; Ohio Smutter and Separator Co., Bucyrus, O.; Richmond Manufacturing Co., Lockport, N. Y; Messer & Aldrich, Beloit, Wis.; Jas. Graham & Son 1014 Penn Ave., Pittsburgh, Pa.; Anton Kufeke, Glasgow, Scotland.; Farmer Roller Mill Co., Grand Rapids, Wis.; P. G. Hill Washington, D. C.; Weidler & Allen, Cincinnati, O., and many others in this country and abroad.

THE UNITED STATES MILLER SHOULD BE KEPT IN EVERY OFFICE HAVING ANY INTEREST IN THE MILLING INDUSTRY.

For One Dollar, we will send THE UNITED STATES MILLER for one year and ONE copy, postpaid, of either of the following useful and entertaining books, viz: Ropp's Calculator; Ogilvie's Popular Reading; Ogilvie's Handy Book of Useful Information; Fifty Complete Stories by Famous Authors; The Great Empire City, or High and Low Life in New York.

For $1.60 will send the UNITED STATES MILLER for one year and Webster's Practical Dictionary, or for $2.25 will send the paper for two years and the Dictionary—For $2.75 will send the UNITED STATES MILLER for one year and Moore's Universal Assistant and Complete Mechanic.—For $3.25 will send the UNITED STATES MILLER for one year and Dr. Cowan's Science of a New Life. A very valuable book which every man and woman should read.—For $1.50 will send the UNITED STATES MILLER for one year and "Everybody's Paint Book," recently published.—For $1.25 we will send the UNITED STATES MILLER for one year and "The Fireman's Guide, a Handbook on he Care of Boilers." In the following list, the figures to the left of the name of each paper indicate the regular subscription price of hat paper, and the figure to the right, the combination price for the UNITED STATES MILLER for One Year and the paper specified.

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Subscription price of each paper named below:	ONE YEAR.	Subscription price of each paper named below:	ONE YEAR.	Subscription price of each paper named below:	ONE YEAR.
$2.60 Northwestern Miller	$2.50	$1.25 Chicago Weekly Times	$2.10	$1.00 Inter-Ocean, Chicago	$2.60
1.00 American Miller	1.50	1.00 Chicago Weekly Tribune	2.00	2.00 Mechanical Engineer	2.50
1.50 London Miller	2.50	5.00 Turf, Field and Farm	5.50	1.00 Mechanical News	2.00
1.00 Millstone	1.50	1.00 Miller Journal	1.50	1.50 Milling World, (Weekly)	2.00
1.00 Modern Miller	1.50	1.00 St. Louis Globe Democrat	2.00	1.00 Miller's Review, (with flour trier)	1.75
4.00 Hints on Mill Building(book)	4.00	1.00 Boston Globe Democrat	2.00	3.00 New York Weekly	3.25
3.20 Scientific American	3.50	5.00 Bradstreet's	4.50	1.00 Post-Dispatch, (St. Louis)	2.00
1.50 American Agriculturalist	2.00	4.00 Frank Leslie's Chimney Corner	4.25	3.00 St. Nicholas	3.60
4.00 Harper's Magazine	4.20	3.00 Frank Leslie's Illustrated News Paper	4.25	1.00 Milwaukee Sentinel	2.00
4.00 Century Magazine	4.60	2.50 Frank Leslie's Popular Monthly	3.15	1.00 New York Sun	2.00
2.50 American Machinist	3.20	4.50 Harper's Weekly	4.10	1.00 New York World	2.00
1.00 Millwright and Engineer	1.50	4.00 Harper's Bazar	4.10		
1.00 Deutsch-Amerikanische Mueller	1.50	2.00 Harper's Young People	2.75		

WE WILL GIVE CORRESPONDINGLY LOW RATES ON ANY OTHER PUBLICATION THE SUBCSRIBER MAY DESIRE.

ADDRESS,

E. HARRISON CAWKER,

N. B.—In writing for advertising rates, please state amount of space desired and length of time advertisement is to run.

Publisher United States Miller, No. 124 Grand Ave., Milwaukee, Wis.

NEWS.

A cargo of Russian flour was recently sold in New York City.

The flour mill at Maryville, Pa., burned May 13. Loss $20,000.

Gordon Barker & Co.'s mill at Sparta, Ill., burned May 18; loss $30,000.

Wm. Horton has purchased Amos Phelps' mill at Delavan, Wis., and Mr. Phelps has retired from the business.

Poole & Hunt, the well-known manufacturers of Baltimore, have each given $1,000 to aid the Centenary Biblical Institute of Baltimore, which prepares young colored men for the ministry.

The Wellington (Kansas) roller mills have been thoroughly overhauled, and have started up satisfactorily. The Allis rolls are used. The mill is owned by Mr. George H. Hunter; Mr. C. H. Barnard is the head miller.

The Metropolitan flouring mill of George V. Hecker, New York City, is expected to shut down in a few days, and remain shut from two to four months. It employs 150 men. The Croton mill in the same street, is expected to continue running with increased capacity. The Metropolitan turns out about 1,200 barrels of flour per day, and the Croton 1,600.

We recently received a letter from Mr. O. P. Briggs, Secretary of the PRAY MANUFACTURING CO., of Minneapolis, Minn., from which we take the liberty of making the following extract: We have just contracted to build the Lincoln mill for the Washburn Mill Co. at Anoka, Minn. Our plans were subjected to the most severe criticism and were pronounced by all to be far ahead of our competitors. We have also the contract for furnishing the machinery for the new million and a half bushel elevator to be erected by the Union Elevator Co. of this city. In this case, also, our plans were adopted unanimously after having been examined by all the leading mill and elevator men in the west. This is the fourth elevator we have planned on the *Esplin* system and there is now no question but that the system will replace all others now in use. The Washburn Mill Co. have adopted it for their elevator at Anoka which is to have a capacity of 125,000 bushels. The Esplin system is a grand success and it saves the builder an immense amount of money.

The Simpson & Gault Manufacturing Co., manufacturers of flour-mill machinery, made an assignment May 25, to John R. Sayler for the benefit of its creditors. Its estimated liabilities are $125,000; assets, $75,000. The deed declares that dullness in business and disappointment in making collections to pay maturing indebtedness caused the failure. The preferences are as follows: In favor of Mary S. J. McGroarty, for $5,700; Mary T. Fitch, $3,778.25; Lucy D. Gault, $900; Robert Simpson, $30,033.91; R. P. Charles, $5,388.66. Total, $45,100.82. A lease on property on the west side of Elm street, south of Second, was transferred to Sarah Simpson for $12,000. The company was incorporated in October, 1881, with an authorized capital of $300,000, $150,000 of which it was claimed was paid in. The firms of Simpson & Gault, the Straub Mill Company, and the Peerless Wringer Company were merged in this organization. A year ago the company claimed that it had $90,000 invested. At present William P. Simpson is president and C. J. O'Hara is treasurer of the company.

During the past month, the Case Manufacturing Company, of Columbus, Ohio, have been favored with a very good business indeed; among the many orders they received, we note the following: From the La Grange Milling Co., La Grange, Ind., 10 pairs rolls with automatic feed; from Henry Studebaker of Farmland, Ind., for machinery for a complete roller mill on the Case system; from Peck & Hazelton, Hazelton, Kansas, for a complete outfit—breaks, rolls, purifiers, scalpers, centrifugals etc., for a full roller mill on the Case system; also for a full line of machinery for a roller mill on the Case system, for Stanley & Hawkins, Alliance, Ohio; from A. L. Strong & Co., mill furnishers, Omaha, Neb., for 10 pairs rolls and other necessary machinery for Blowers & Pheasant's mill at Osceola, Neb.; George Sears, of Shopiere, Wis., has ordered two additional pairs of Case rolls with patent feed; S. T. Rush & Co., Dawn, Ohio, have ordered another No. 1 Case purifier; W. T. Pyne, of Louisville, Ky., has ordered rolls with patent feed, for W. J. Meyers; W. C. Mansfield, Cleveland, Tenn., has ordered the Case patent feed for purifiers not of Case make, the patent feed being adapted to purifiers of any make; David Mercer, of Loudenbourg, Pa., is putting in a No. 1 Case purifier; Henry Schneer, of Mt. Vernon, Ind., has contracted for rolls, purifiers and a full line of machinery for a complete roller mill on the Case system; A. E. Atherton of Grand Blanc, Mich., has ordered a Case centrifugal; J. H. Henderson, Woodlawn, Ill., has ordered Case rolls and other machinery; A. Brand & Co., Smithville, O., have ordered bolting reels, Case purifiers, etc.; G. W. Cissel, Washington, D. C., has ordered eight No. 1 double purifiers, with patent feed, etc.; A. C. Strong & Co., Omaha, Neb., have ordered Case rolls, scalpers, bolting reels, etc., for G. W. Miller & Sons, Surprise, Neb.; Kerfoot Bros, Des Moines, Ia., have placed an order for two pairs Case rolls, etc., for Cory Bros., at Lehigh, Ia.

A MODEL MILL. We quote the following extract from a letter received from the CASE MFG. CO., of Columbus, O., May 18—"Mr. G. W. Cissel, of Georgetown, D. C., has recently sold out his half interest in the 600 bbl. E. P. Allis mill of that city, and has purchased a large mill building, which, for some time, has been idle in the same city, and had began the erection of a 400 bbl. roller mill. Before giving his contract, he sent his miller and millwright through the different parts of the country, visiting all the leading mills for the purpose of investigating the best systems of milling, and the most perfect and latest improved machines. The experts visited Cleveland and other points where they saw the Jonathan Mills reel in operation and also the reels of the E. P. Allis, Case Mfg. Co., Nordyke & Marmon Co. and other leading mill furnishers of the country, and examined the different mills built by these several firms. On their return to Washington they gave their order to the Case Mfg. Co. for a full line of their rolls and purifiers, and to Jonathan Mills for a full line of his flour dressers. The mill will be one of a novel construction and will be the most perfect in every detail. No expense will be spared to make it the finest and most complete mill in the United States. The machinery has been purchased without reference to cost, and the very latest improved and best line of machines have been selected. The mill will be erected under the supervision of Mr. E. Corbet, who has previously built two large flouring mills, using the Case machinery, in Georgetown, D. C., both of which mills have proven remarkably successful from the start. In view of the fact that the mill will be equipped with a full line of the Jonathan Mills flour dressing machines, and a full line of the latest improved Case automatic machinery, it will no doubt draw more than usual attention. It is calculated when the mill is completed it will be automatic throughout. It is expected that the mill will be in operation by the first of August, 1885."

Mr. J. Harrison Carter, a prominent milling engineer in London, Eng., has recently taken the contract for erecting a large roller mill at Coventry, Chili, South America, for Messrs. Balfour, Williamson & Co., said to be the largest firm of flour merchants in England. The mill is to be driven by a 40-inch Leffell turbine, supplied by a waterfall of 30 feet. The building is to be erected in a peculiar shape to resist the shocks of earthquakes not infrequent in that country. The walls of the lower floor are 4 feet thick, and the second 2 feet 6 inches. The top floor and roof are constructed of wood.

MISCELLANEOUS NOTICES.

Short advertisements inserted under this head for one dollar each insertion, cash with order.

WATER-WHEELS.—Two for sale in good condition. Address James A. Bartley, Homer, Mich.

PURIFIERS.—Want to sell 2 Wolf & Hamaker Purifiers, No. 4. In good order, cheap. Address Patterson & Hershey, Saltsburg, Pa.

S. POLLARD, Burnt Mills, Tishomingo County, Miss., wants a partner in said mills. He has between $2,000 and $3,000 invested, but the demands will justify an increase of capital. Fine water power.

THE VICTOR TURBINE

Possesses more than Double the Capacity of other Water Wheels of same diameter, and has produced the Best Results on Record, as shown in the following Tests at Holyoke Testing Flume:

Size of Wheel.	Head in Ft.	Horse-Power.	Per Ct. Useful Effects.
15 inch,	18.06	30.17	.8932
17½ in.,	17.96	36.35	.8930
20 inch,	18.21	49 00	.8532
25 inch,	17.90	68.62	.8584
30 inch,	11.65	52.54	.8676

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This CODE has been approved and is used by many of the best firms in this country and in Europe. It contains Flour Tables, Bran Tables, Middlings Tables, Flour Grades and Brands, Time of Shipment, Dates, Names of Places, American Currency, Sterling Quotations, Table on Limits, etc., Drawing, Credits, etc., Selling, Buying, Orders and Offers, Consignments and Shipments on Joint Account, Miscellaneous, Market Upwards, Market Downwards, Insurance, Shipping and Freight, Shipping by Regular Lines of Steamers, Finance, Bankers' Names, Standing of Firms, Telegraphing, Advices, Commission, Stocks and Crops, Weather, Samples and Quality, Equivalent of Sacks in Barrel, Quantities, Commission Tables, Interest Tables, Equivalent Flour Prices in Currency, Sterling, Francs, Guilders and Marks, Comparative Tables, Sack and Barrel Flour, Ocean Freight Rates (Comparative Table), Sailings from Seaboard (Table), Key to Sailings from Seaboard Table, Foreign Weights and Measures, etc.

We respectfully refer to the following well-known firms: S. H. Seamans (Empire Mills), Sec'y of the Millers' National Association; E. Sanderson & Co. (Phœnix Mills), Milwaukee, Wis.; Daisy Roller Mills, Milwaukee, Wis.; Nunnemacher & Co. (Star Mills), Milwaukee, Wis.; Roots & Co., (Millers), Cincinnati, O.; C. H. Seybt (Miller), Highland, Ill.; Kosmack & Co. (Flour Brokers), Glasgow, Scotland,; J. F. Imbs & Co. (Millers), St. Louis, Mo; E. Schraudenbach, Okauchee Roller Mills, Wis.; Winona Mill Co., Winona, Wis.; and many others.

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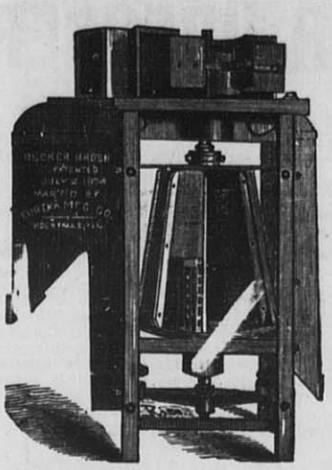

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THOUSANDS OF THESE MACHINES are in use in the United States and foreign countries, and so far as we know all that use them are pleased. Millers, millwrights, and milling experts claim the Cone Shape Solid Cylinder Brush is the true principle to properly clean grain. All machines sent on trial, the users to be the judges of the work. For price and terms apply to

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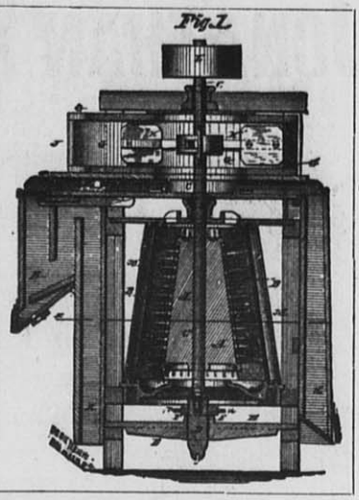

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Short advertisements inserted under this head for 50 cents each insertion.

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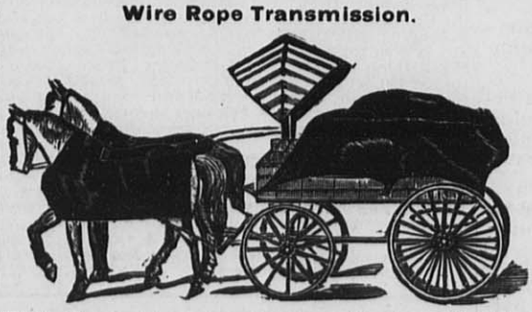

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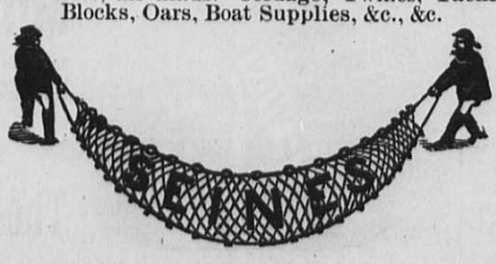

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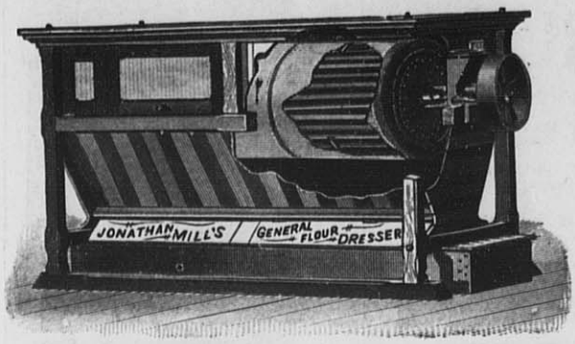
GUARANTEED TO BE SUPERIOR TO ANY OTHER BOLTING DEVICE FOR



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Finely Designed and Mechanically Constructed; Low Speed; Occupies Small Space, and has Immense Capacity.

For Price List, Sizes and Dimensions, send to

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Send also for 150 Page Catalogue Describing their Engine. CLEVELAND, OHIO.

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AND OAT EXTRACTOR.

WHEAT SCOURERS,

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Wheat Brush Machines,

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Thousands of these Machines are in successful operation, both in this country and in Europe. Correspondence solicited.

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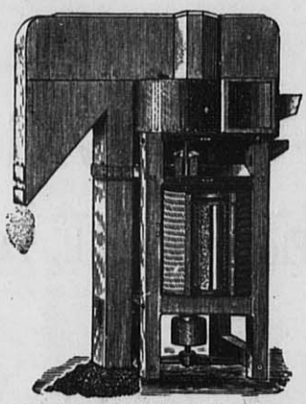

Adjustable Brush Smut Machine.

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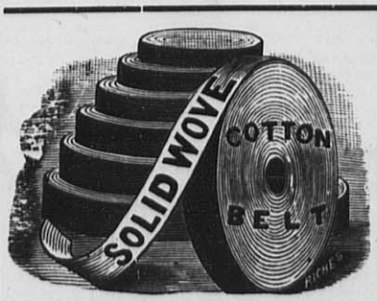
To Preserve Iron and Keep Boilers and Flues from Scaling, use

H. P. GRAVE'S BOILER PURGER.

It has been practically demonstrated that a scale one-sixteenth of an inch thick on a Boiler will require twenty per cent. more fuel than a clean Boiler, while a scale one-fourth of an inch thick will require sixty per cent. more fuel. The scale is a non-conductor of heat, and its formation in Boilers is general through the United States, more especially in the lime and alkali districts, and enough attention has not been paid to keeping Boilers free from accumulations. The cost of fuel for steam purposes is an important item, and any system for economy in this direction should receive due consideration. I am manufacturing a BOILER PURGE which I claim is the best made: *First.*—That it will remove the scale from any Boiler, and, by its continued use, will keep it from forming. *Second.*—That it will not injure the Boiler, Valves or Cylinder, nor foam the water, nor injure the water for drinking purposes. It is easy to use, being in a liquid form, it can be put directly into the Boiler, through the Safety Valve, Whistle Valve, or by Force Pump, or into the Tank. *Third.*—That by its use, *from fifteen to forty per cent. can be saved* in the cost of fuel, besides the expense of putting in new flues every one or two years.

We also refer with pleasure to the following who are using our BOILER PURGER: C. A. Pillsbury & Co., Minneapolis, Minn.; Bassett, Hunting & Co., McGregor, Iowa; Milwaukee, Lake Shore & Western Railway; The J. I. Case Threshing Machine Co., Racine, Wis.; Racine Hardware Mfg. Co., Racine, Wis.; Janesville Machine Co., Janesville, Wis.; and all Engineers running out of Milwaukee on C., M. & St. P. R'y.; Laflin & Rand Powder Co., Platteville, Wis.; Edw. P. Allis & Co., Milwaukee, Wis.; Wisconsin Central R. R. Co., Milwaukee, Wis.; Cramer, Aikens & Cramer, Milwaukee, Wis.; V. Blatz Brewery, Milwaukee, Wis.; Ph. Best Brewing Co., Milwaukee, Wis.; Northern Hospital of Insane, Winnebago, Wis.; and many others.

Address, for prices, etc., H. P. GRAVES, 343 Virginia St., Milwaukee, Wis.



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Leather, Cotton, Rubber — BELTING, BOLTING CLOTH,

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Prices Close and Quality the Best.

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MILWAUKEE, FOND DU LAC, OSHKOSH, NEENAH and MENASHA.
—WITH—
PARLOR CARS
through from Chicago via Milwaukee without change on Day Trains.

New & Elegant Sleepers
from Chicago to Stevens Point on Train leaving Chicago via C., M. & St. P. R'y Co., at 9 P. M.
Also a Superb Sleeper from Milwaukee to Neenah attached to the same train, leaving Milwaukee at midnight. N. B.—This Sleeper will be ready for passengers at Reed St. Depot, Milwaukee, at 9 o'clock P. M.

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NO CHANGE OF CARS
From Milwaukee to Stevens Point, Chippewa Falls, Eau Claire or Ashland, Lake Superior.

These superior facilities make this the **BEST ROUTE** for **GRAND RAPIDS, WAUSAU, MERRILL and points in CENTRAL WISCONSIN.**

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The Shortest, Cheapest and Quickest Route
—BETWEEN THE—
WEST AND EAST
New York, Boston, and all points in Northern and Eastern Michigan.

COMMENCING MAY 17th,
the Palace Side-wheel Passenger **Steamer "City of Milwaukee,"** will leave Milwaukee daily, Sundays included, at 12:00 noon and connect at Grand Haven with Limited Express Train which leaves at 6:00 P. M. Time, Milwaukee to New York, 32 hours.

Ticket Office, 99 Wisconsin Street,
—WHERE—
SLEEPING CAR BERTHS
can be secured. Dock, foot of West Water Street.

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Fast Freight & Passenger Line.

Freight Contracted on through Bills Lading to all points in
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New York, Pennsylvania,
New England & Canada.
AT LOWEST RATES.

All freight insured across Lake Michigan. Passengers save $2.75 to all points East.
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L. C. WHITNEY,
Gen'l Western Agent.

Read Testimonial.

SAVES 20 BUSHELS OF WHEAT PER WEEK.

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Gentlemen:—Yours of the 6th at hand. Will say your Cockle Machine is all O. K. and would be useless to think of doing without it. Before we put in your Cockle Machine, we run our wheat through a rolling screen, as many mills are doing to-day, and in order to get out part of the cockle it also took out about twenty-five bushels of small wheat; so we save about 18 to 20 bushels of wheat per week by using your machine. I do not fail to tell men this. Its merits will be better known as it speaks for itself. Yourg truly.
E. FOLZ, Head Miller.

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REAL ESTATE DEALERS AND

GENERAL LAND AGENCY OFFICE,

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Will attend to the Sale, Purchase, Exchange, and Lease of Lands; Locating of Lands; Paying of Taxes, and Protection of Lands; Redemption of Lands from Tax Sales; Inspection of Lands and Perfecting of Titles; Make Investments for Capitalists, and Make Loans on Lands, and all other matters in any way connected with the General Land Office Business, in a Prompt, Reliable and Satisfactory manner.

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MINERAL LANDS.

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OVER ONE MILLION ACRES OF THE FINEST

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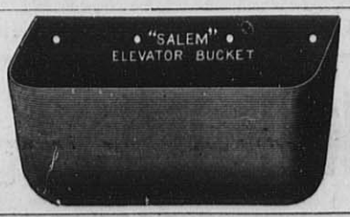
Our Terms are Liberal, as the New Era of Low Prices Demand they Should Be.

Correspondence Solicited, and References furnished on Application.

The "Salem" Elevator Bucket.

Shovel Edge;
Seamless Rounded Corners,
CURVED HEEL.



Runs Easy,
Strong and Durable,
Empties Clean.

W. J. CLARK & CO., Sole Manufacturers, SALEM, O.
New York Office & Salesroom, No. 9 Cliff St.

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MILWAUKEE DUST COLLECTOR MFG. CO.

EXCLUSIVE MANUFACTURERS OF THE

PRINZ PATENT DUST COLLECTOR,

Licensed under the combined patents of the Geo. T. Smith Middlings Purifier Co , Kirk & Fender, Samuel L. Bean, Faustin Prinz, William Richardson and M. D. Beardslee, bearing patent numbers as follows:

63,325	207,585	235,197	251,120	258,878	272,474
125,518	211,033	239,755	251,121	259,872	299,852
149,434	228,023	248,984	258,875	259,873	315,996
171,973	235,376	250,813	258,876	272,473	And Others.

Machines manufactured by any other party, not excepting the Geo. T. Smith Middlings Purifier Co., are outright infringements of our machine, and subject to royalty to us.

The milling public are fully aware that we have, by our additional inventions and experience, brought the Prinz Dust Collector to perfection, and any attempt by other parties to manufacture our machine is open robbery. We are sure the justice-loving millers of this country will not submit to such an outrage.

All manufacturers and parties using an infringing machine will be liable to prosecution and damages. We control over twenty-five Dust Collector Patents, a large number of which have been granted to us direct.

Please send us your orders as usual.

MILWAUKEE DUST COLLECTOR MFG. CO.,

MILWAUKEE, WIS.

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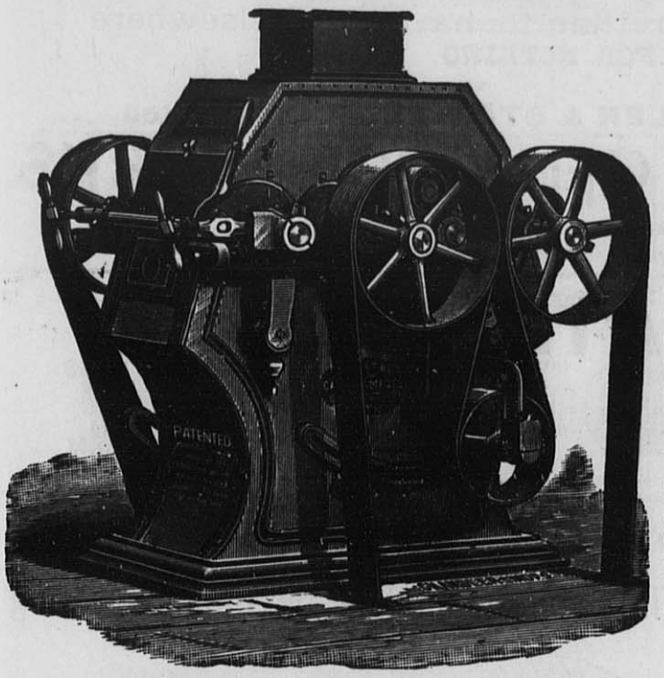
On Top! On Top! On Top!

Read the following letters which indicate the kind of Mills we build everywhere.



9 X 18 FOUR ROLL MILL.

OFFICE OF THE NEW ERA MILL CO.

NASHVILLE, TENN., MAY 5th, 1885.

CASE MFG. CO., COLUMBUS, O.

GENTLEMEN:—In handing you herewith balance due on contract for reconstruction of the New Era Mill to a complete 350 bbl. full Roller Mill, we beg to express our thanks for the efficient manner in which the work has been performed, and for the honorable and faithful compliance on your part of all the terms of the contract in every particular. The Mill has been in successful operation for over two months, and we have had no trouble or delay of any kind since we first started up, and our results, both as to quality and yield of flour, have been entirely satisfactory. We feel confident that we have as good a mill as there is in the country; that we can make as good flour, and as much of it per bushel of wheat. We have a demand at good prices for all the flour we can make, and no complaints, but universal praise. You have cause to be proud of the finish and workmanship of the machinery, and of the nicely finished and perfect running line of rolls. You have *carte blanche* to refer parties to our mill, and we will be pleased at any time to show such parties the full operations of the mill.

Yours truly,

JAS. L. GAINES, Prest.

NASHVILLE, TENN., MAY 4th, 1885.

CASE MANUFACTURING CO., COLUMBUS, O.

GENTLEMEN:—Respecting the qualifications of the New Era Mill since being refitted to the full "Roller System" by you, I would say from personal observation of its workings in all its details coupled with the output in percentages, yields and qualities of its flours, it is a success. Successful in point of mechanical construction, successful in point of perfect separations, successful in point of excellence of grades in their several relative positions, and further successful in point of percentages and yields.

The Rolls themselves are well constructed, easily adjusted and exhibit a very pleasing appearance, combined with good finish and workmanship. The automatic feed saves the miller from anxiety and worriments, consequent on irregular feeding appliances, and the tension appliances are all one could ask for to secure positive and easy running.

Respecting the separations, I am positive that in this direction she has no peer, they being so perfectly under control that each and every separation presents itself for individual manipulation if necessity demands it, and as our quality of flours rank with the best, I am free to say that the mill to-day stands a monument of great credit to all the talent employed in the reconstruction, and further I would say, and it, too, not being the smallest classification, is the fact that since we started the mill off, not one inch of bolting, scalping or purifying cloth has been changed, or even a spout displaced. While all this can be truly said, I will not close without mentioning the very gentlemanly manner in which you carried out our contract to the letter, and having been personally interested in the construction of said contract, I am in a position to know whereof I speak. All who bid on our work will well remember the requirements of the contract, and I am pleased to be able to say, that personally I regard the fulfillment of all agreements perfect. Wishing you abundant future success.

I remain, yours truly,

JOHN METHERELL, Head Miller.

We have not changed $10 worth of cloth, and scarcely a spout in any mill we have built for months, which is proof positive that we have the best system of bolting, as well as the best machines of any competing mill builder in the country.

For low prices, address,

THE ✻ CASE ✻ MANUFACTURING ✻ CO.,

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Green Bay, Winona and St. Paul RAILROAD

IS THE **SHORTEST ROUTE** FROM

GREEN BAY

and all points in

EASTERN * WISCONSIN

—TO—

NEW LONDON,
STEVENS POINT,
GRAND RAPIDS,
WAUSAU,
MERRILL,
WINONA,
LA CROSSE,
CHIPPEWA FALLS,
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ST. PAUL, MINNEAPOLIS,

and all points in
MINNESOTA, DAKOTA,
and all points on the
NORTHERN PACIFIC RAILROAD and ST. PAUL, MINNEAPOLIS & MANITOBA RAILROAD.

Passengers from all points on the CHICAGO & NORTHWESTERN R'Y, south of Green Bay and Fort Howard, connect with the

G. B., W. & St. P. R. R.

—AT—

FORT HOWARD JUNCTION.

They will find it

THE SHORT LINE

to all the above points.

THE PASSENGER EQUIPMENT

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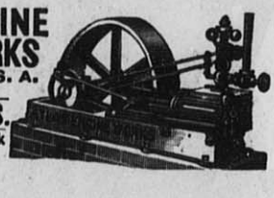

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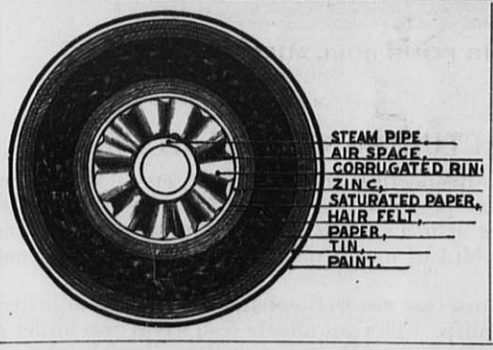

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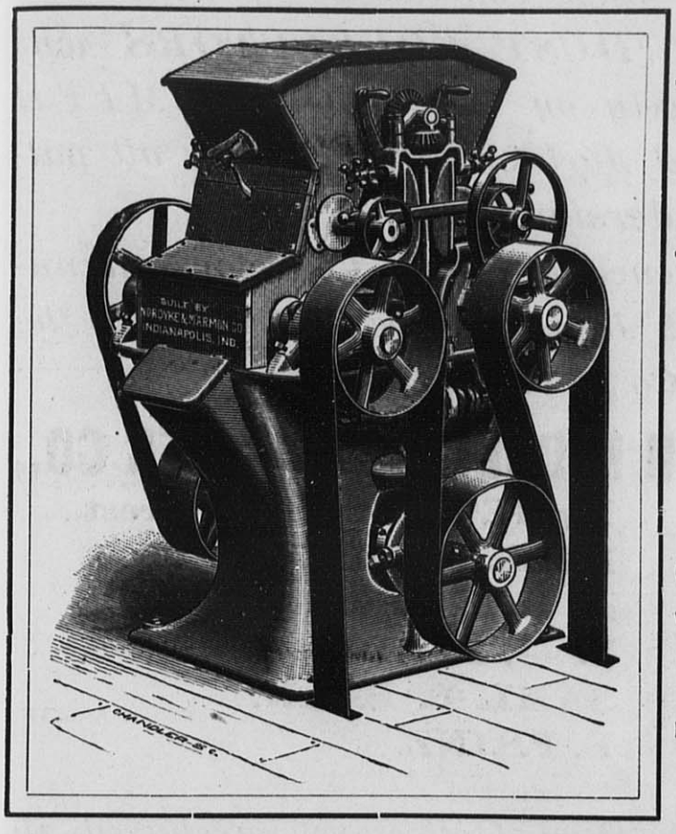

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Gentlemen:—Our mill, as planned and diagrammed by you, has been in steady operation for nearly one year past, and in proof that you have given us a successful job, we will simply say that in the face of a very dull trade, and while other mills were running on short time, we have been running full handed, in order to supply a genuine demand for our flours. We must also notice, that although you only promised us 100 bbls. capacity, we easily make 140 bbls. per day without deteriorating in grades of flours. We use No. 2 wheat, and consume 4 bushels and 28 pounds in making a barrel of flour. We make about 28 per cent. of very high patent, 68 of bakers, and 6 per cent. of low grade. Yet our mill is so constructed that we may vary the percentages to suit various markets.

We have always been victorious in the sharpest competition, and from the first day of starting we have kept the highest position among all roller mills, either located or represented in this region.

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OFFICE OF ANCHOR MILLING CO.,
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Gentlemen:—We have just been awarded all the first premiums on flour offered at the great Fair and Exposition. We made a clean sweep of them all, over all competitors, which includes all the mills in St. Louis, and all over the West, in fact the entries were open to the whole United States. We received 1st premium on Patent Flour, 1st premium on Straight Flour, 1st premium on Clear Flour. This embraces the entire list; the flour was made on your rolls, and you should make the fact widely known. Hurrah ! for the N. & M. Co., and Anchor Milling Co.

Yours very truly,

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NOTE.—The entire reduction of the wheat and middlings is made upon our rolls in this mill.

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500 BARREL MILL IN MISSOURI.

Read what an Old Miller who has thirty-four pairs of these Rolls in constant use says:

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Gentlemen:—In regard to the workings of our new mill erected by you, will say it is working fully up to and beyond our expectations. Our average work is fully 33 per cent. over your guarantee. Since starting our mill last July we have had no complaint of our flour from any market where sold. It gives universal satisfaction, and we have it scattered on the trade from Chicago to Galveston, Texas. Our yields are all that are attainable. We have tested it on both Spring and Winter wheats with satisfactory results on both varieties. Since the mill was turned over to us we have not changed a spout or a foot of cloth, nor have we found it required to make any changes. We have run as long as six days and nights without shutting steam off the engine, not having a "choke" or a belt to come off. The mill is entirely satisfactory to us, and for a fine job of workmanship, milling skill and perfection of system, we doubt if it is surpassed in the United States to-day. It is certainly a grand monument to the ability and skill of Col. C. A. Winn, your Milling Engineer and Designer. You may point to this mill with pride and say to competitors: "You may *try* to equal, but you will never beat it." Wishing you the success that honorable dealing deserves, I am,

Yours, etc.,

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OF

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Arrangements have this day been concluded by which the PRINZ and KIRK & FENDER DUST COLLECTORS will hereafter be manufactured exclusively by the GEO. T. SMITH MIDDLINGS PURIFIER CO., at Jackson, Mich., under all patents owned or controlled by the undersigned.

All communications with reference to Dust Collectors manufactured under our patents should hereafter be addressed to the Geo. T. Smith Middlings Purifier Co., Jackson, Mich.

GEO. T SMITH MIDDLINGS PURIFIER CO.,

Dated, Jackson, Mich.,
May 12, 1885.

By GEO. T. SMITH, Prest.
KIRK & FENDER.
A. H. KIRK.
W. J. FENDER.
SAML. L. BEAN.
F. PRINZ.

In pursuance of the above, all Dust Collectors purchased in connection with Purifiers will be fitted to the Purifier and tested with them before leaving our shops, thereby effecting a saving of from $20 to $30 to the purchaser on each Dust Collector, and insuring more satisfactory results from the Collector.

The Dust Collector will be built of better material than heretofore, and in workmanship and finish, will be made fully equal to our Purifier.

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