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See Page 8.

The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 18, No. 1. } MILWAUKEE, NOVEMBER, 1884. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

ONE OF THE KIND OF MILLS WE BUILD.

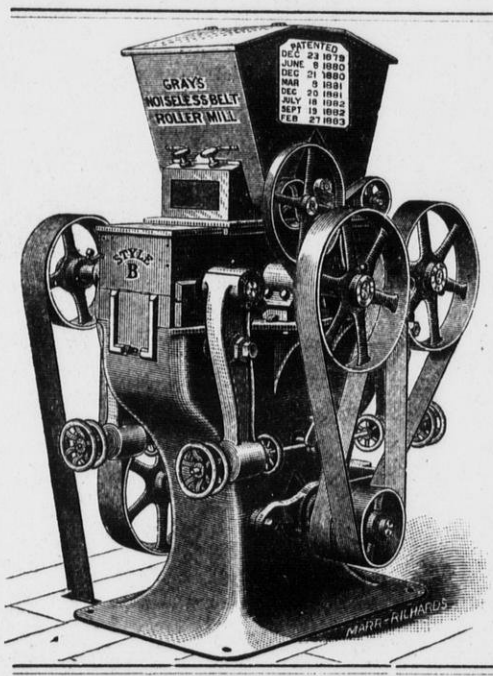
THE JOHN T. NOYE MFG. CO., BUFFALO, N. Y.

Laury's, Pa., September 1, 1884.

GENTLEMEN:---Since putting in the rolls made by you, and changing the bolting arrangements as advised, I have been running night and day, turning out over two hundred barrels of flour per twenty-four hours, with a yield surprisingly under $4\frac{30}{60}$. I doubt if our flour can be beaten in this country. This statement is pretty strong, but can be backed up. I can clean the middlings so that there is not a particle of flour left. Millers coming here to see our offal, do not believe but I have some secret way of manipulating the material. It is all square milling on superior rolls and with a superior system. I could not fill my orders if I had double the capacity.

Yours truly,

J. R. SCHALL.



GRAY'S NOISELESS BELT ROLLER MILLS.

STYLE B

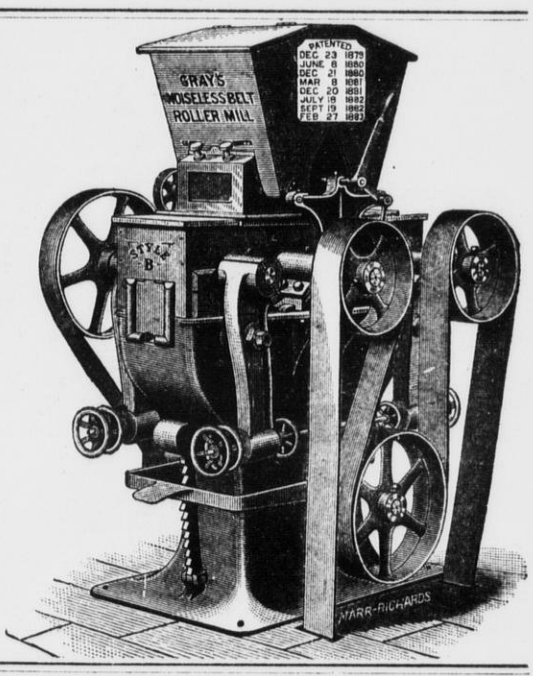
FOR SMALL MILLS.

Send for Circulars and Prices.

E. P. ALLIS & CO.,

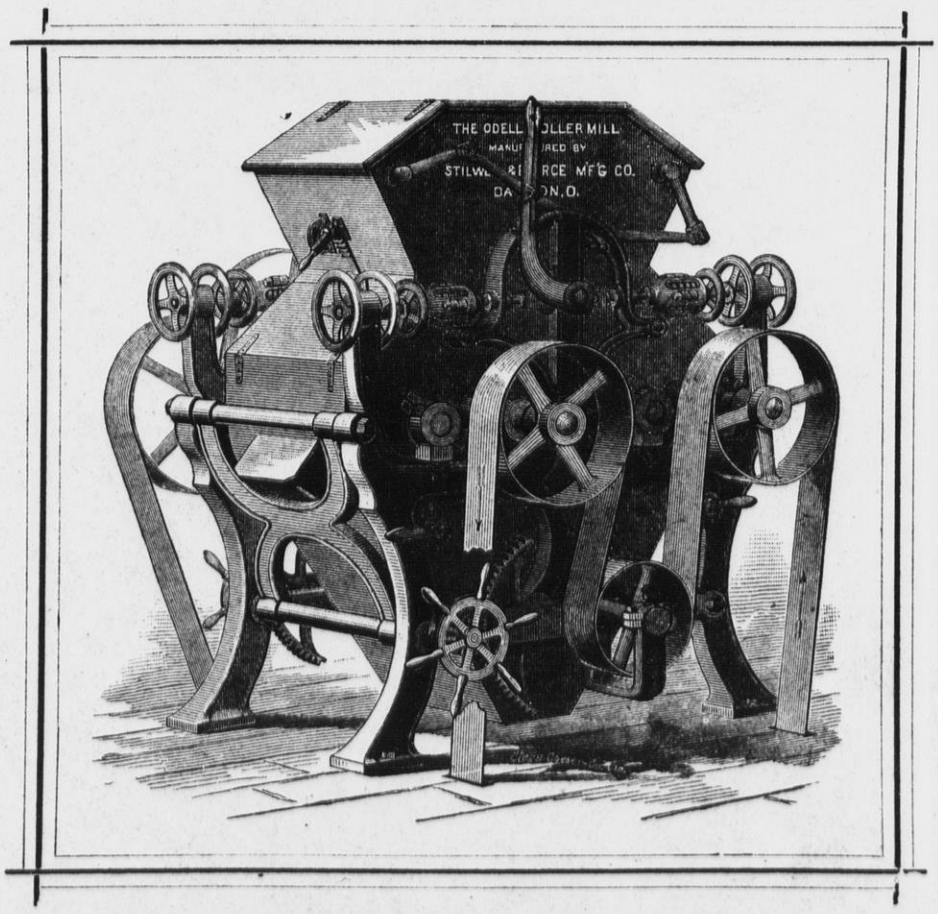
Sole Manufacturers.

Reliance Works, Milwaukee, Wis.



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 experiencn arranging mills. Can furnish machines on Short Notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MANUFACTURING CO.,

Agents for Du Four's Bolting Cloth.

[Please mention this paper when you write to us.]

DAYTON, OHIO, U.S. A.

The United States MILLER

Published by E. HARRISON CAWKER. { VOL. 18, NO. 1. } MILWAUKEE, NOVEMBER, 1884. {Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

[For the UNITED STATES MILLER.]

THE WHEAT QUESTION.

In our last issue we referred briefly to the experiments of M. Gatellier, in France, relatively to the production of a superior wheat for milling purposes. The results of M. Gatellier's experiments, undertaken primarily for the purpose of putting the French millers in as favorable position as possible for competition with foreign industry, form the subject of a communication to the *Journal de la Meunerie*, from which we extract the following interesting particulars.

"It is not only necessary to take every precaution, at the time of harvesting, for bringing in the grain as dry as that of foreign countries, but in addition to dryness it is required that our wheat should be equally rich in gluten, that is in azotic substance.

For this purpose a question is raised between agriculture and milling analogous to that existing between agriculture and beet sugar manufacture, as regards the richness in sugar in different beets.

By a succession of experiments in cultivation and chemical analyses carried on during the year with the assistance of M. L'Hôte, analytical chemist at the Institute of Agriculture, we have come to the conclusion that it is entirely feasible, with certain precautions, to raise in France wheat just as rich in gluten, as that raised in a virgin soil, where the azote, accumulated during centuries, furnishes the necessary gluten.

This may be accomplished by attending properly to 1, the question of seeding, 2, the question of cultivation.

As to seeding, it is necessary to sow such varieties of wheat that abound in gluten. Unfortunately, however, we have done the very opposite, in this respect, to what we should have done, abandoning our own native wheat with long kernels, and adopting in its stead the English varieties with round kernels. Gennerally speaking a long grain contains more gluten than a round one, and for this reason; if the transverse section of a kernel of wheat is examined under the microscope, it will be noticed that, in the farinaceous mass the richness is greater in the part contiguous to the covering than in the center. The consequence of this fact is, that the more the kernel approaches to the spherical form, the smaller its cortical farinaceous part is, compared with its whole volume, and the less gluten it contains. The more elongated it is, on the contrary, the more gluten it will contain in its farinaceous mass.

On the other hand the elongation of the wheat kernel must not be exaggerated, so as to approach, for instance, the shape of a kernel of rye; since, for the same reason, the more elongated the kernel, the greater the percentage of shell, as compared with the total volume, and, consequently, the greater will be the yield of bran, and the smaller the quantity of flour obtained. By thus encouraging the cultivation of the round English varieties of wheat, by reason of their greater yield of flour, we committed the serious error of deteriorating the quality of our flour.

The question of seeding wheat, therefore, resolves itself into finding productive varieties with sufficiently elongated kernels. Such wheat may be produced by applying the method of crossing different species of wheat, indicated by M. Vilmorin.

As to cultivation of the wheat, it is necessary, after having chosen a suitable seed, to do the very opposite of what is done in the cultivation of sugar beets, for the matter in wheat analogous to sugar is starch, the production of which must not be developed. If then the requirement for producing sugar is to plant the beet in a soil poor in nitrogen it follows that wheat must be planted in a sufficiently nitrogenous soil. This condition of cultivation is more easily obtained in beets than in wheat, for if there is, in the soil used for wheat, an excess of nitrogenous matter it is apt to lead to serious accidents in the germination of the wheat, which, however, may be avoided by employing superphosphates.

But if the wheat is sown in a soil where the nitrogen is too much exhausted, as, for instance, after beet roots, without taking the precaution of covering the wheat with a manure sufficiently nitrogenous in proportion to the mineral substances which it contains, the results will be a wheat, that ripens well and looks finely, considered as grain, but does not contain enough gluten.

In 1881, we sowed the same wheat, called White Victoria, in the same soil, at Luzancy, with the same complementary manures in three different conditions of rotation of crops, viz:

1. After sugar beets.
2. After oats, preceded by luzernes, for breaking.
3. After *minette* and use of dung, at the rate of 30,000 kilogr. per hectare. (2½ acres.)

We obtained wheats that were all different in aspect. The most beautiful in appearance was the wheat raised after beets.

In 1882, we harvested and milled each kind separately, and this is the result of analyses of the flour in a dry state made by M. L'Hôte.

	Nitrogen.	Gluten.
1. Wheat after beets	1.45	9.06
2. Wheat after oats and luzerne	1.61	10.06
3. After *minette* and direct manuring	1.68	10.10

It appears from this first experiment that the best appearing grain, the one after beets, was the least rich in gluten.

We then proposed to ourselves this question: Is it possible to enrich in gluten the wheat sown after beets, with the help of more nitrogenous manures? For the sake of a reply, we sowed, in 1882, the same Victoria wheat in the same soil after beets, but varying the quantity of manures. After harvesting and grinding them separately, M. L'Hôte has obtained the following results of his analyses of flours:

Kilograms.	Manure Employed on the Hectare.	Proportion of Nitrogen to Phosphoric Acid in the Manure.	Nitrogen Contained In the Flour.	Gluten Contained in the Flour.
100 300	Sulphur of Ammonia. Superphosphate.	4-9	1.67	10.43
200 200	Sulphate of Ammonia. Superphosphate.	5-9	1.82	11.37
300 300	Sulphate of Ammonia. Superphosphate.	12-9	2.04	12.75
300 600	Sulphate of Ammonia. Superphosphate.	6-9	1.81	11.31

These results prove that it is possible to increase by cultivation the richness in gluten of wheat, and that this depends on the proportion of nitrogen to the mineral matter employed in the manure.

It is well known that the German method of cultivation, spreading the dung on wheat before beets, instead of placing it directly on the beets, produces a beet that is richer in sugar, because the dung, sufficiently buried beforehand, does not destroy the sugar already formed, by a slow growth. We are satisfied that this method, which presents certain difficulties of execution, nevertheless is equally favorable to the production of gluten in the wheat, provided a certain quantity of superphosphate is employed at the same time as the dung, for correcting any liability to deleterious influences on the wheat.

DECLINE OF WATER POWER AND ADVANCE OF STEAM POWER.

An interesting and highly suggestive phenomenon in the industrial progress of this country is the relative decline in the amount of water power as compared with steam power utilized for business purposes. This tendency is all the more suggestive by reason of the fact that no other country in the world is as well endowed with natural water power as the United States. Manufacturing enterprises usually seek water power, in a new country, because of its cheapness and availability, but when all the valuable powers have been absorbed by those who are determined to get a steady revenue from them, neither of these two features of original desirability stand forth with much allurement. As water powers are improved they become more costly to the users; as steam power is improved it becomes less costly to the users.

In 1870 the census showed that there were more water wheels in use than steam engines, and that their horse-power was almost as much as the total horse-power of the engines. The census of 1880 showed more steam engines than water wheels, and a total power far in excess of the latter. The change is best shown in tabulated form, thus:

YEAR.	Water Wheels.	Horse Power.	Engines.	Horse Power.	Total.
1880	55,404	1,225,379	56,483	2,135,458	3,410,837
1870	51,018	1,130,431	40,191	1,215,711	2,346,142
Pr. ct. of in.	8.60	8.40	40.54	7	45.38

During the four years since the census was taken the progress of steam power has been greater than in any other four years of our history. What a census would now show as the relative decline of water power to be, or what the next census will show it to be, can be imagined after a study of the above figures.

The reasons for the great advance of steam power are not difficult to discover. Water power is not as reliable as it was before the forests were thinned out or cleared away, while, owing to improvements to engines and boilers, steam power is more reliable. Severe droughts and heavy floods have both operated to set at naught the business calculations of those dependent upon water power, while winter freezes and floating debris contribute to the annoyance and damage. The cost of dams is sometimes considerable. It is proposed to build a new one at Holyoke, to cost a million dollars, or a million and a half. The expense of land overflowed is often a large item in the cost of water power. As land becomes more valuable the cost of water power must increase. The application of power in industrial operations increases in a greater rate than the number of hands employed as shown by census returns, and the demand for steam engines and boilers is one that must inevitably keep pace with the development of the industrial resources of the country. It is a demand that has assumed elements of permanency.—*American Machinist.*

THE NATURAL GAIT OF THE HORSE.

We are asked by several members of the Cuvier Club to settle a dispute by deciding what the natural gait of a horse is. This is a question which goes to the root of breeding theories. It is admitted that the walk is natural to all, but what of the pace, the trot and the run? Stroll through the paddock with a breeder and watch closely the action of the foal. If it has been dozing in the sunshine one hundred yards from its dam, it will get up with sleepy eyes, lazily stretch its legs and start off in a walk, looking back at you inquiringly. Startle it a little and you will probably see it amble or pace. Startle it more, and it will move with greater swiftness in a trot. Rush at it with shouts and the clapping of hands, and you will in some cases cause it to break into a run. The unweaned colt is still the child of nature. It has not been molded by any school, by any training art. All the gaits struck by it, therefore, must be natural. Some horses, as they ripen, show a preference for the fast trot, others for the fast pace, and others still for the fast run. These gaits are interchangable, and the preference frequently depends as much upon foot balancing as upon conformation. Some horses fall off in speed when they change from the trot or pace into a run. Others increase their speed in making the same change. The two fastest trotting horses in the world, taking the record for our guide, are a combination of what are termed pacing, trotting and running strains. They are living evidence that great and harmonious results can be obtained by a proper blending of the three strains which are presumed to furnish us in their individuality with three natural gaits. One man breeds to intensify the trotting disposition, a second man to confirm the pacing tendency, and a third man breeds to increase the running habit. In moving to his objective point he studies form and temperament as well as other ancestral traits. And the effort to develop certain characteristics at the expense of other traits brings us face to face with the philosophy, the hotly-debated theories of breeding. We shall not stir the cauldron now. We prefer to answer the question briefly. All gaits used by the foal are natural to it, but the gait at which the horse excels depends upon the ancestry and the training school.—*Turf, Field and Farm.*

SOME USEFUL NOTES FOR ENGINEERS.

Among the questions most frequently asked of our inspectors when making their ordinary visits, are the following, which are of such general interest to engineers as to warrant publication:

1st. How much water per pound of coal should be made into steam at 60 pounds pressure per square inch with 60-inch tubular boilers properly made, well set, and carefully fired? Under the above conditions, from 8 to 10 pounds, dependent somewhat, of course, upon the quality of the coal and the temperature of the feed water.

2d. How much more coal per pound of water does it take to carry 80 pounds per square inch than it does to carry 60 pounds per square inch? This question could with more propriety be put as follows: How much more heat does it take to make a pound of steam at 80 pounds pressure per square inch than it does to make a pound at 60 pounds per square inch? Practically, no more coal will be required; theoretically, about 4-10 of one per cent., or about 1-250th part more.

3d. Do you get enough better results from steam of 80 pounds per square inch than you do from steam at 60 pounds per square inch to pay the extra wear and tear of boiler and engine? Depends entirely upon conditions. If you can make use of steam at 80 pounds pressure it pays to use it; there are conditions, however, where 60 pounds, or even less, would be decidedly more economical.

4th. How much more heat do you get from pipes carrying 60 pounds pressure than from pipes carrying 10 pounds pressure? Two and one-tenth per cent. more heat will be given out per pound condensed from steam of 60 pounds pressure than from steam at 10 pounds pressure, in falling from temperature due to the respective pressures to 212° Fahr.

5th. What proportion of direct heating surface to the volume of a fairly protected room is required to maintain the temperature of the room at 60° Fahr. in buildings heated by steam? From 1-75th to 1-250th, according to size and exposure of the room.

6th. How much is a given amount of steam reduced in bulk by compressing it from 60 pounds per square inch to 80 pounds per square inch? About 20 per cent. See any steam table.—*The Locomotive.*

AN IMPORTANT COURT DECISION.

A very important decision on roller mill patents was rendered Sept. 17th, by Justice Mathews and Judge Sage in the United States Circuit Court for the Southern District of Ohio. It is a case of the greatest importance not only to the parties to the suit but to millers throughout the country. It was a case of Stilwell & Bierce Manufacturing Co. against Stout, Mills & Temple. The principal points involved in the case were the mechanical devices for simultaneously spreading apart the rolls and shutting off the feed by means of a through shaft, and the retaining of the adjustment of the tension springs; all of which are covered by the Odell patent, under which the Stilwell & Bierce Manufacturing Company have the sole right to manufacture. The case was tried before Judge Mathews of the United States Supreme Court, and the Odell patent sustained, and the "Livingston" roller mill manufactured by Stout, Mills & Temple held to be an infringement.—Dayton (O.) *Daily Journal.*

UNITED STATES MILLER.

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MILWAUKEE, NOVEMBER, 1884.

ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 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.*

LARGE LOAD OF FLOUR.—A steamer left San Francisco recently with 1,090 tons of flour on board. Her destination was China. The war with France has made the Chinese good customers of the wheat growers of the Pacific coast.

A GERMAN edition of the report on the comparative experiments on different milling systems to the syndicate of grain and flour in Paris is in preparation by Boyoljub Loowe, editor of the *Ungarische Muehlen-Zeitung* in Budapest. We have before called attention to the importance of this report, which, in a German dress, will, no doubt, be also extensively read in this country.

Of the wheat imported into Great Britain for seven months in 1884 the United States furnished 13,773,980, a little over half, India less than one sixth, Russia about one-tenth, Australia less than one-tenth; 876,057,000 pounds of flour were imported in the seven months; of this the United States sent 599,603,800 pounds.

A CEMENT of three parts of fine coal ashes, one of red-lead, three of sand and two of chalk, by weight, made into a putty with oil, is excellent for filling up the exposed joints of stones and bricks. It is said to become as hard as marble.

THERE are 3,985 paper mills in the world, which turn out annually 1,904,000,000 pounds of paper. Half of this is used in printing generally, while 600,000,000 pounds are used for newspapers. An average of eleven and a half pounds is used by every Englishman, and ten and a quarter pounds by every American.

THE Hudson River Tunnel about which so much was said a few years ago, and in undertaking the construction of which upwards of $1,000,000 was expended, has long since been abandoned, and, very likely, forever. The company met with almost insurmountable difficulties from the start. The excavation that was made is full of water.

THE CHEMISTRY OF BREAD-MAKING.

BY PROFESSOR CHARLES GRAHAM, D. SC., F. I. C.

The cereals are undoubtedly the most valuable of all the fruits of the earth, and it is, therefore, needful that we should rightly study their mode of preparation for the use of man. The question may have occurred to some of you, how can science aid art? Surely a good baker requires no assistance from science. Let us see what is the answer to it. Without going through a number of instances in which undoubtedly science has advantaged art, I will refer only to one or two. In the first place, there is no doubt that agriculture has benefited largely by the investigations of Liebig, and, following him, of others, into the composition of the mineral matter of plant life. It is perfectly true that in metallurgy, steel was obtained ages ago of the very highest excellence. Yet surely the study of chemistry has enabled us to manufacture iron and steel at such a price and in such quantities as would have been utterly impossible in the olden time. Again, take another illustration, that of dyeing; there are two methods of dyeing of great historical interest—that of Turkey red dyeing and that of indigo dyeing—because these are the only two really permanent colors, and secondly because science has investigated the nature of Turkey red dyeing, and has found out that the important principle in the madderroot was alizarine. Science has not stopped at merely finding the nature of dye; science has succeeded in creating the dye out of gas-tar products. Lately, indigo has in a similar way been created, it is always a success, and will soon become a great commercial success. I give those merely as illustrations of the way in which science can benefit art, and though we need not look for any such startling, such epoch-making discoveries as that of the making and building up alizarine and indigo, still I feel sure that science little by little will greatly improve the art of bread-making.

I have the honor of addressing some London bakers, and there are London bakers who are exhibitors in this Exhibition, and it is perfectly true that we now get in London bread of the highest excellence, but still the Council of this Exhibition are not thinking only of the best West-end bakers,—they are not limiting their views, only of the West-end bakers, they are considering the interestsof the United Kingdom, and, indeed, of other countries, and one of the arrangements I understand in regard to these lectures is that they shall be published in a very cheap form, so that in this way one's audience may be larger than that in this room. I had proposed to make a few remarks in regard to the history of bread-making, but, after the introductory remarks of our Chairman I think I need do no more than briefly enumerate the three distinct stages. First, flour was mixed with water, baked, and then eaten; the next improvement was the discovery of leaven; both of these are very old methods for the treatment of flour and known to the ancients; and at the present day we have examples of both systems; we have bread without any ferment at all, as in parts of Spain, and we have also leaven bread in the North of Europe, but the next great and important improvement was the use of yeast. This has occurred in more modern times, how many hundred years ago I know not, but still comparatively modern has compared with the older methods.

AVERAGE COMPOSITION OF THE GRAIN OF CEREALS.

	Old Wheat.	Barley.	Oats.	Rye.	Maize.	Rice.
Water	11.1	12.0	14.2	14.3	11.5	10.8
Starch	62.3	52.7	56.1	54.9	54.8	78.8
Fat	1.2	2.6	4.6	2.0	4.1	0.1
Cellulose	8.3	11.5	1.0	6.4	14.9	0.2
Gum and Sugar	3.8	4.3	5.7	11.3	2.9	1.6
Albuminoids	10.9	13.2	16.0	8.8	8.9	7.2
Ash	1.6	2.8	2.2	1.8	1.6	0.9
Loss, &c	0.8	1.0	0.2	0.5	0.7	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

COMPOSITION OF WHEAT GRAIN ASH.

	Laws and Gilbert.	Way and Ogston
Phosphoric acid	49 68	45.01
Phosphate of iron	2.36	0.82
Potash	29.35	31.44
Soda	1.12	2.71
Magnesia	10.70	12.36
Lime	3.40	3.62
Sulphuric acid	.....	0.34
Carbonic acid	.....	0.02
Chlorine	0.13	0.13
Silica	2.47	3.67
Total	99.21	100.02

Before studying the phenomena of bread-making, it will be necessary to study the composition of the cereals employed in bread-making. In the corner of the room there is a table taken from papers published by Messrs. Lawes and Gilbert, giving us the composition of wheat, barley, oats, rye, maize, and rice.

I wish to draw your attention to some important points connected with those analyses. We may divide the constituents of the cereals of wheat, for example, into the mineral matter, and the matter which is not mineral, and to which we give the term organic matter. The mineral consists of phosphate of potash, and of magnesia, about one-half being phosphoric acid, one-third potash, and one-tenth magnesia. The organic constituents consist of what are termed carbo-hydrates, together with a small quantity of fat. I say carbo-hydrates, an expression used to indicate that in these bodies the carbon, the hydrogen, and the oxygen are united together to form the susbtance, starch, for example, and that the hydrogen and oxygen are in the same proportion as in water, though they are not combined together as in water, and therefore, the expression carbo-hydrates is given to such bodies. These carbo-hydrates are the substances that yield heat to the body, and by so doing yield force, power. In addition to these we have the substances termed albuminoids. These are also spoken of as flesh-formers. Now, it is perfectly true that this expression correctly describes the function they perform, namely, to repair the waste of the muscular tissue, but at the same time it is somewhat misleading, in that these flesh-formers are really mainly used up in giving heat and force by their burning or oxidation in the body, only a comparatively small quantity being necessary for the waste of the muscular tissues, which is by no means so great as physiologists formerly assumed.

Starch occurs stored up in vegetable structures for much the same reason as fat occurs stored up in animal structures, namely, for future use; thus we find starch in bulbs, and in tubers. It is the starch-yielding property of the potato which renders it chiefly valuable. We find it also in roots, such as turnips, and the beet-root; we find it, of course, in seeds, and lastly we find it in the thick leaves termed by botanists, cotyledons, the two thick leaves which in leguminous plants, such as the bean and the pea, form the larger part of the seeds. The whole of the matter inside the testa or skin of the bean really consists of the two thick young cotyledon leaves; thus we have various sources of starch. Starch, however, obtained, will be found, when examined under a microscope, with a proper measuring arrangement, to have different characteristic appearances, and also sizes. For example, the starch of wheat varies much from that of barley, and very much from rice. It is by the size, which can be accurately measured, and by the form or shape which we can note under the microscope, that we are enabled to identify various kinds of starches. Starch, as you know, does not dissolve in cold water, and indeed water is used in the extraction of the starch after grinding the grain, or rasping the potato from which we are deriving the starch. But when to a mixture of cold water and wheat-starch a laundress pours boiling water, she raises the temperature, and the result is that the starch cell bursts. The outside of the cell is composed of woody fibre, and at this higher temperature it bursts, the internal contents of the starch cell then come out. To those contents we give the term granulose, which makes a paste with the hot water. This is an important point in regard to the digestion of starch. At a temperature of about 300 degrees F. starch is converted into dextrine, or British gum. If, however, instead of employing that plan you add, to a thick starch paste a little ground malt, the ground malt will convert the starch paste into dextrine, together with another product which I will refer to presently. But the dextrine formed in that way is not pure. A still better plan is to make a mixture of 1,000 parts of starch with 300 of water, to which previously two parts of nitric acid have been added; you mix the two together, and this is afterward air-dried, and when it is revolved in a cylinder at the temperature of not higher than 220 degrees to 230 degrees, it is converted into dextrine, and it is in that way that the dextrine of commerce is now manufactured. You are all acquainted with the appearance of it, because you have all of you seen the 1d. or 2d. bottles of British gum; it is on the back of every postage stamp, and it is used very largely in the arts, in calico-printing, for example. Closely allied to starch and dextrine come cane sugar and maltose sugar. Cane sugar, you know, is derived from the cane plant, from the beet, or from the maple, its properties you are sufficiently well acquainted with, namely, that it is sweet, and dissolves in water and crystalizes easily. Maltose sugar is what I was referring to just now when I said that on the addition of a little malt to starch paste there was another product formed besides dextrine, and that product is maltose, having the same centesimal composition as cane sugar. Maltose sugar was discovered by Debrunfaut, and was afterwards the subject of experiment and study by Musculus, but it was not until comparatively recently, owing to the researches of Mr. O'Sullivan, of Burton-upon-Trent, that we really understood the nature of the change that took place by the action of these albuminoid bodies, such as we find in malt, upon starch paste. He showed us that a starch solution is acted upon by the diastase, as it is called, of the malt, and that it takes up water and forms maltose sugar and dextrine, the maltose sugar having the same formula as cane sugar. This process continues, and more maltose is formed by the action of the diastase upon the more complex dextrines which are formed at first. Ultimately, however, a large portion of maltose is formed, and a very small quantity of dextrine, and under the most favorable conditions it is possible to convert the whole of the starch into maltose sugar. The maltose sugar thus made, dissolves in water, it is slightly sweet to taste, and it does not crystalize in the way that cane-sugar does, and is much more difficult to obtain in a crystalline form. Maltose sugar is readily acted on by the yeast ferment.

The next matter of interest in the study of these bodies is the albuminoids; the albuminoids contain carbon, hydrogen, and oxygen just in the same way, but not in the same proportion as the carbo-hydrates, but they have in addition nitrogen, and sometimes a little sulphur. Their general composition is given in this table:

AVERAGE COMPOSITION OF ALBUMINOIDS.

Carbon	53.3
Hydrogen	7.1
Nitrogen	15.7
Oxygen	22.1
Sulphur	1.8
Total	100

Hypothetical formula, C^{72} H^{112} N^{18} SO^{22}.

If we take the formula of starch as being C_{72}, H_{120} O_{60}, you may not see any relationship between that and the albuminoids, but yet the probabilities are that the starch is only an altered form of the albuminoid, and that it has previously through such an albuminous stage. In the table, by Lawes and Gilbert, you will find that the albuminoids are given there for different cereals. At the same time, as we shall see presently, cereals differ very much in the percentage of albuminoids they contain, and in the table the placing of 10.9 of albuminoids to old wheat was perfectly correct for the sample of wheat analyzed, but it leads one to assume that wheat is less rich in albuminoids than barley and oats, but it is distinctly on the average not less rich, but rather more so than barley. If we take ordinary flour, and then elutriate it with water so as to get rid of the starch, we shall ultimately obtain crude gluten. The crude gluten, of which we have some samples on the table, is a tough elastic mass, and it is on account of this great resisting tendency that we are enabled to keep in the carbonic acid that is subsequently formed in fermentation, and thus to make a well-piled loaf. Now crude gluten contains fibrine and gluten; about four-fifths of fibrine and one-fifth of gluten; the gluten is slightly soluble in water, but not the fibrine. Of course, if fibrine be moistened and left for a time it will gradually break down in the complexity of its structure, and will form simpler kinds of albuminoids, and this is the kind of deleterious action that takes place when we have a long-continued period of wet weather at harvest time. But while washing the flour in order to obtain this crude gluten, we have already dissolved out some soluble albuminoids.

(To be continued.)

THE ENGINEER'S MURDER.

BY HENRY MORFORD.

Yes, I once committed a murder,
Outside the realms of law,
That I s'pose the body of people
Would not heed the worth of a straw;
But I think I should sleep the sounder,
Sometimes, when the night winds wail,
If I never remembered "murder,"
Or never told over the tale.

No matter the road I was running—
'Twas in one of the Middle States;
So many years since, that I wonder
Why the sorrow never abates.
I was young, and hasty, and savage,
As youth is apt to be,
And my hand,—well, my hand, you will fancy
Was a trifle too ready and free.

I was in my caboose just at evening,
Say 'tween Holden and Fiddler's Run,
Making time, to reach Wayman's Siding
For the up-train, at five twenty-one;
I had had a hot box at Grossman's,
And that put me four minutes behind;
So I felt like,—the word is ugly,
But the truth!—like "going it blind."

Round a curve, and running,—say forty,
Or it may have been fifty, who knows,—
And there on the track before me,
A black fiend, at full scream, arose!
A dog, that sat down in the middle,
Between the two lines of rail,
And howled like a fiend incarnate,
With a mixture of bark, yell and wail.

Did I stop? Not much! I just opened
The throttle valve, by a mite,
And over that dog she went flying,
And over something else,—white!
I stopped her then with a shudder,
And ran back; in a mingled heap
Lay the dog, and what had been lately
A baby-girl laying asleep!

Have I never got over it? No, sir!
And I never shall till I die!
Why didn't I heed the warning?
It was only a black dog's cry,
I may have done many more murders,
And 'tis likely I have on the whole;
But there's none, when the night winds are howling,
That lay such a weight on my soul!

And what is the worst of my sorrow,—
Don't make the one grand mistake!
I shouldn't grieve twice, I've a fancy,
For the poor dead baby's sake!
But the dog that was doing his duty
So nobly,—I grieve for him;
And I never tell over the story
But I find my old eyes grow dim.

Written for Steam Engineering.

BOOK NOTICES.

We have received a copy of an essay by Wm. Jago, F. C. S., F. I. C., entitled, *Technical Education for Millers and Bakers*. This essay shows clearly the advantage of thorough education and training for millers and bakers. Mr. Jago is head master of the Brighton (Eng.) School of Science, and has during the past year or two delivered courses of lectures of great interest to the milling trade.

The edition of the November *Century* will be the largest ever printed of that magazine. Besides the first chapters of Mr. Howell's new novel, "The Rise of Silas Lapham," the story of an American business man, its fiction will include "A Tale of Negative Gravity," by Frank R. Stockton; "Free Joe and the Rest of the World," an illustrated story by Joel Chandler Harris, and "The Lost Mine," by Thos. A. Janvier, with a full-page picture by Mary Hallock Foote.

We acknowledge the receipt from the Treasury Department of a copy of annual report on foreign commerce of the United States for the fiscal year ended June 30, 1884, prepared by Joseph Nimmo, Jr., Chief of Bureau of Statistics.

Technical Education for Millers and Bakers, is a valuable essay published by Mr. Wm. Jago, of Brighton, Eng. It is replete with suggestions of the importance of technical education.

The present year is the centenary of the re-organization, after the revolution, of the educational system of New York State. A grand scheme was devised, it is said, by Alexander Hamilton, by which the Board of Regents was created, for the purpose of promoting the organization of academic as well as common-school education in every county in the State. The whole system was to be crowned by Columbia College, as King's College was patriotically re-christened, of which the Regents were made the trustees. The scheme came to more on paper than it did in reality, but nevertheless it gave a stimulus to education in New York that has been felt ever since. An interesting account of this plan is contained in a paper on "Columbia College," to appear in the November *Harper's*, taking up the history of that institution where it was left by the article on "King's College" in the October number. The latter portion of the history of the college shows an interesting example of modern progress, especially in connection with its new library system, of which a detailed description is given.

NEWS.

Elizabeth, Minn., is soon to have a 175-barrel mill.

C. Smith, of Campbellford, Ont., has finished his mill.

J. A. Gambrill's mill, at Baltimore, Md., is to be enlarged.

Tinch & Welborn, of Lexington, N. C., are building a flour mill.

The Washburn Mill, at Minneapolis, will put in a Wright engine.

Manitoba farmers are getting sixty cents per bushel for No. 1 hard.

The new mill of Lyer & Mayhew, at Thamesville, is nearly completed.

Flour from the Rochester (Minn.) mills will be on exhibition at the New Orleans Exposition.

The Crosby Mill, at Topeka, Kas., has started up with increased capacity of 500 barrels per day.

The Pillsbury "A" Mill, in Minneapolis, recently turned out 5,468 barrels in twenty-four hours.

At a sale of government property at Harper's Ferry the Potomac water-power brought $25,000.

Reed & Bischler, of Stanwood, Mich., have just started up a new seventy-five-barrel roller mill.

The Ogilvie Milling Co., of Winnepeg, have wheat-buyers at thirty-six railway stations.

The Eufaula (Ala.) flour mills, which burned recently, will be rebuilt at once.

The flour mills of R. H. Dulaney, at Middleburgh, Va., are to be enlarged and improved.

D. Barron, of Amherstburg, Ont., has been changing his mill and adding new machinery.

The "Kent Mill," at Chatham, Ont., which was burnt some time ago, is replaced by a 350-barrel mill.

Thomas Parker, of Sombra, has bought the "Fred Flour Mills," near Strathburn, Ont., of McLean & Miller for $4,250.

A. Wolverton & Co., are running their mills at Wolverton, Ont., day and night, and do not intend to close down this season.

It is stated that the farmers of Whitewood, Man., would give a liberal bonus towards the erection of a good mill at that place.

L. C. Porter, of Winona, Minn., has been appointed to take charge of the Minnesota flour exhibit at the New Orleans Exposition.

Harrington & Smith's, of Pleasantville, Ia., will rebuild with a capacity of seventy-five barrels per day. Their mill was burned September 26th.

The architects of the West will meet in Chicago on the 12th of November for the purpose of forming a Western association of architects.

Bread baked from flour made on the Case system in the mill of Adam Simpson, Owatonna, Minn., took the first prize at the late Minnesota State Fair.

An English firm is now making casks and barrels of steel. They are said to be lighter and more durable than wood.

Mr. Carvith, of Pouty Pool, Ont., has made great changes in his mill, and added a general supply of milling machinery.

The Geo. T. Smith Purifier Company, of Stratford, Ont., supplied the purifiers and other machinery for Cooper's mill, at Belleville.

In the French Chamber of Deputies a bill has been introduced to levy on foreign corn a duty of five francs per 100 kilograms.

One hundred and twenty-five thousand bushels of wheat have been shipped East from Manitoba via Port Arthur since harvest.

By the breaking of a dam, October 20th, the streets of Ansonia, Ct., were flooded, and all movable articles swept into the Naugatuck river. At one time the water was four feet deep on the streets.

The new elevator erected by Mr. Geo. A. Stewart, of Winnipeg, Man., for the Bell Farming Company, at Indian Head, had the first trial October 10th, and succeeded in putting through fifty bushels in two minutes, and has a capacity of 50,000 bushels.

The Mebane Milling Company, Durham, N. C., with a capital of $500,000, has bought the Tate & Trollinger flour mills, at Mebane, same State, and after enlarging the buildings and putting in requisite machinery, will engage in several manufacturing pursuits.

Messrs. Campbell & Stevens, of Chatham, Ont., have completed their large grist mill. The Geo. T. Smith Company, of Stratford, furnished the rolls and purifiers and other machinery of the latest improved patterns. The mill is one of the finest in the Dominion.

Nashville, Tenn., claims a population of 70,000 inhabitants, and hopes to have 100,000 within five years. It is the greatest educational center for the South, having no less than eight colleges. It has 700 manufacturing establishments. Nashville is one of the wealthiest cities in the South.

Gavin Hume, a very extensive miller at Galt, Ont., has made an assignment. His business career covered over a period of twenty-five years, and he was considered financially strong. The cause of the sudden collapse was through the foreclosing of a mortgage held by a Glasgow firm against his mill and property. His liabilities are about $70,000, with a like amount of assets.

In the register of deeds office there was recorded, October 21st, a document which was given by the sheriff of Outogamie county, Wis., conveying $25,000 worth of water-power property, at Kaukanna, including mills thereon, known as the Stoveken property, to William Van Northwick, of Batavia, Ill. For years the property has been in law, and many deeds have been given to various parties who have loaned money. Mr. Van Northwick was a stockholder in the concern,

A millwright by the name of Edward Chatfield, of Waterbury, Ct., has a peculiar mania. At frequent intervals he would appear in the road in secluded places, stark naked, as ladies were driving past. For a long time he eluded all attempts to capture him, and it was not known who he was. Finally, however, a couple of shrewd detectives secured him in a nude condition. He is said to be an excellent mechanic, is well off, and has an interesting family.

Wheat from Manitoba is now pouring into Montreal via the Canada Pacific Railroad. Part of it is for local milling purposes, and the remainder for shipment. About four million bushels are expected during the winter from the same quarter, and the new elevators on the wharves are being pushed rapidly to completion.

October 23 the machinery in the Wabash (Ind.) flouring mills came to a sudden stop, and upon investigation it was found that seven large eels, each nearly four feet long and weighing seven pounds, had entered the turbine wheel, which supplies the motive power for the mill, and choked it up. In the afternoon the mill again stopped abruptly, and th turbine was a second time found full ef eels. This time nine, weighing in the aggregate sixty pounds, were removed from the wheel. The eels enter the old Wabash canal from the Wabash river at Lagro.

A number of new elevators are to be built at Minneapolis next season, to accommodate the increasing grain business of the northwestern States. The Northern Pacific Railroad Company will erect one with a capacity of 4,000,000 bushels; the Minneapolis Elevator Company will erect two, each with 1,250,000 bushels capacity; the Chicago, St. Paul, Minneapolis & Omaha Railroad Company will provide one to hold 500,000 bushels, and the Chicago, Milwaukee & St. Paul Railroad Company will build one of 1,000,000 bushels capacity.

The S.S. Neptune, despatched by the Dominion Government in July last to Hudson's Bay, to assist in determining the navigability of the Bay and Straits, returned to St. John's, N. F., on Saturday last. Her voyage has been a pleasant one, attended by scarcely a mishap. Her voyage has done much to show how simple would be the navigation of these waters, were proper charts available. A number of observation stations were established, from which we will doubtless get interesting facts next summer, which will divest the bay and straits of a few more of their imaginary errors.—*The Commercial* (Winnipeg).

A Milwaukee capitalist will make a novel experiment near Aberdeen, Dakota, this fall. An artesian well has just been completed that flows 3,000 gallons a minute, equal to 106 horse power. Another will be made large eneugh to run a mill capable of making 200 barrels of flour a day, and the experiment of artesian well power as a perpetual motor will be made. The result will be carefully watched.

The three Washburn mills at Minneapolis use between 450 aad 500 gallons of lubricating oil per month. This consists mostly of lard and machine oil, only a small quantity of castor and sperm being used. In the Washburn A mill five regular oilers are employed, there being a head man and two for each watch. They look after all heavy bearings and the rolls, while on lighter machinery the attendants themselves do the oiling. In the other two mills there are only two regular oilers—one for night and one for day—the rolls and lighter machinery receiving care from the men attending them.

MANITOBA ITEMS.—During the past month the Portage la Prairie Milling Co. have ground about 20,000 bushels of wheat and have purchased about 40,000 bushels already this season, and the new storehouse in connection with the mill is almost completed. Thirty thousand bushels of wheat have been purchased in Emerson by the Ogilvie Milling Co. The mill on the Shell river, the property of the Mississippi Milling Co., is being converted into a roller mill. The machinery and mechanics are expected to arrive at Moosomin in a few days.

MILLS BURNED DURING OCTOBER.—Joseph Hicks, Patton, Mo.; insured. J. B. Dale, Dodd City, Tex., by incendiaries, October 7th; loss, $8,000. S. Routzong, Covington, Ky.; loss, $20,000; insured, $15,000. S. J. Johnson, Waynesboro, Ala.; loss, $3,000. Blandin & Co., Ft. Dodge, Ia., with 2,000 sacks of flour and 10,000 bushels of wheat, October 7th; loss, $75,000. Walton Bros., Fairburg, Ill.; loss, $35,000; insurance, $10 000. October 2d, Walsh, DeRoo & Co.'s mill, at Holland, Mich., was damaged by fire to the extent of $8,000; loss on stock, $8,000; fully insured. October 9th, the Imperial Mill, owned by L. Blanden & Co., at Ft. Dodge, Ia., burned; the mill was valued at $45,000, and the stock destroyed at $10,000; insurance on mill, $25,000; on stock, $5,000.

The Case Manufacturing Company of Columbus, Ohio, have received the following orders during the month: From J. C. Crenshaw, Charleston, Mo., for a full outfit of breaks, rolls, purifiers, centrifugals, scalpers, bolting reels, etc., for a complete gradual reduction mill, on the Case system, using twelve pairs of rolls; from A. M. Stevens, Dyersburgh, Tenn., who has been contemplating changing his mill to the roller system, and after investigating the different systems, and examining the different machines at the St. Louis Exposition, and accordingly gave them the order for a complete outfit of breaks, rolls, purifiers, centrifugals, etc., for a full roller mill on the Case system, using fourteen pairs of rolls; from Richter & Co., Williamstown, W. Va., for one three-roll break machine; from John Black, Sycamore, Ill., for one Case improved centrifugal roll; from Dietley & Son, Mooreheadville, Pa., an additional order for one centrifugal reel; from the Albion Mills Co., Albion, Mich., for one patent automatic feed for their Allis roll. Geo. Graham, Trenton, Mo., writes them: "Your automatic feed would cover a multitude of sins if the rolls had them." From Wisner Bros., for one pair rolls with patent automatic feed; from G. J. Burrer, Sunberry, O., for two pair rolls and other machinery; from D. Smith, Hayesville, O., who is making some changes in his mill, an order for three pairs rolls with patent automatic feed; from Wood & Kenyon, Onawa, Ia., two pair of rolls with patent automatic feed; from C. W. Ellis, Dubois, Ind., for a complete outfit of breaks, rolls, purifiers, centrifugal reels, scalping reels, bolting chests, etc., for a full roller mill on the Case system, twelve pair rolls will be used, and the mill, when completed, will have a daily capacity of sixty to seventy-five barrels; from Leggate & Co., Centerville, Ind., for two pair of rolls with automatic feed; from S. L. Ellis & Co., Hopkinsville, Ky., for two pair of rolls with patent automatic feed; from Flenekin Turbine & Co., of Dubuque, Ia., for two pair of rolls and one No. 1 double purifier, with patent automatic feed, to be shipped to E. Maskery & Son, Marquoketa, Ia.; from W. I. Pyne, Louisvile, Ky., for nine sets of rolls, with patent automatic feed; from Cox & Funkhouser, Jonesboro, Ind., for a complete line of breaks, rolls, purifiers, centrifugals, scalpers, bolting chests, etc., for a full roller mill on the Case system, using twelve pair of rolls with patent automatic feed: from the C. A. Gambrill Manufacturing Co., Baltimore, Md., for six feed boxes for their purifiers—this makes over twenty Case automatic feed boxes that the Gambrill folks are using on different purifiers; from Kerfoot Bros., Des Moines, Ia., for four sets of rolls, with patent automatic feed; from J. B. Ficklin, Fredericksburg, Va., an additional order for one set of rolls, with patent automatic feed; from M. Jones & Son, Beacon, Ia., two pair rolls, with patent automatic feed; from A. B. Welkins & Son, Patalaska, O., who are making some changes in their mill, one "Little Giant" break machine and scalpers, combined, and two pair rolls, with patent automatic feed; from W. McKellop, Perry, Mich., for one Case improved centrifugal reel, and two pair rolls, with patent automatic feed; from Chas. Emke, Fredonia, N. Y., for an outfit of breaks, rolls, purifiers, scalpers, centrifugals, bolting chests, etc., for a full roller mill on the Case system, using twelve pair rolls, with patent automatic feed. They have also shipped to A. B. Childs & Son, London, Eng., two sets rolls and one No. 1 double purifier, with patent automatic feed; and to J. S. McCray & Co., Omaha, Neb., one No. 1 double purifier, with patent automatic feed, and are furnishing J. W. Scott, Bentonsport, Ia., with breaks, rolls, purifiers, etc.; from Click & Mills, Dayton, O., for breaks, rolls, scalpers, centrifugals, etc.; from Castree, Mallory & Co., Flint, Mich., for two pair of rolls, for Howard's Mill, at Flint; from A. B. Childs & Co., London, Eng., for breaks and rolls; from Simpson & Gault, Manuf'g Co., a break machine for the mill at Medora, Ind.; from A. Hulshizer, Utica, O., for eleven sets of rolls and a complete line of machinery for a mill on the Case system; from A. Comingo, Pleasant Hill, Mo., for two pair rolls and a Case centrifugal; from J. Gregg, Blanchester, Mo., for a "Little Giant" break machine; from W. D. Massie, Canton, Ill., for a pair of rolls; from B. M. Allison, Fairview, W. Va., for breaks, rolls, scalpers, centrifugals, etc.; from Joseph Biers, Fredericktown, O., for a purifier; from M. Clapp, Rogersvile, Mich., for two pair rolls and purifier; from Lucas & Aikins, Urichsville, O., for milling machinery; from J. S, Murphy, for patent feed and purifiers; from Collins & Black, Baugn, Tex., for two pair rolls and purifier; from H. Mulzer, Powell, O., for purifiers and rolls; from K. C. Arnold, Truxton, N, Y., for rolls; from S. S. Cline & Co., Gallatin, Mo., for a complete ten-roller mill, on the Case system; from F. L. Burdick, Owatonna, Minn., for patent feeder for purifiers; from D. Narracong, Evansville, Wis., for one set of rolls.

The following orders for the Celebrated Gray's Noiseless Belt Roller Mills have been received during the past month by Edward P. Allis & Co., of the Reliance Works, Milwaukee, Wis: Bryan & Wheaton, Plankinton, D. T., a Gray's noiseless belt roller mill; George Raithel, Lincoln, Ill., seven pair of Allis rolls, in Gray's noiseless belt frames; Plymouth Roller Mill Co., Lemars, Ia., twenty pair Gray-Allis rolls, in Gray's noiseless belt frames; A. McMurtrie & Co., Belvidere, N. J., a Gray's noiseless belt roller mill; White & Baker, Pittsford, N. Y., a No. 3 four-break reduction machine, Gray's noiseless belt roller mill, and other machinery; James Cummings, Lyn, Ont., six pair Allis rolls, in Gray's noiseless belt frames; A. Colburn & Son, New Cassel, Wis., six pair Allis rolls, in Gray's noiseless belt rolier frames; Burroughs & Piersons, Flint, Mich., a Gray's noiseless belt roller mill; Kiddoo Bros., Neosho, Mo, eight pair Allis rolls, in Gray's noiseless belt frames, Gray centrifugal reels, Gray purifiers, and complete outfit for an all-roller mill; Gehlen Bros., Lemars, Ia., a Gray's noiseless belt roller mill; J. P. Shoemaker & Son, Fenwick, Mich., a porcelain roller mill, in Gray's noiseless belt frame; Downs & Hefford, Topeka, Kan., a No. 3 four-break reduction machine and other machinery for their mill; Piper, Gibb & Co., Pipersville, Wis., six Allis rolls, in Gray's noiseless belt frames; J. G. Campbell, Kingston, Ont., eight pair Allis rolls, in Gray's noiseless belt frames, and other machinery to fit them out in good shape on the roller system; Sidle, Fletcher, Holmes & Co., Minneapolis, Minn,, another Gray's noiseless belt roller mill, with their new first break corrugations; W. Rhodes, Fertile, Ia., a Gray's noiseless belt roller mills; Dewey & Stewart, Owosso, Mich., a Gray's noiseless belt roller mill; R. W. Lewis, Esdaile, Wis., a No. 3 four-break reduction machine and other machinery; Stern & Wolrab, Milwaukee, Wis., a Gray's noiseloss belt roller mill: Egypt Milling Co., Ashley, Ill., twelve pair Allis rolls, in Gray's noiseless belt frames, and all necessary machinery to fit them out on the roller system; Theo. Doneho, Medoc, Mo., a Gay's noiseless belt roller mill, bolting chests, etc.; T. & J, W. Andrews, Thornbury, Ont., ten pair Allis rolls in Gray's noiseless belt frames, purifiers, centrifugal reels, etc., in fact a complete outfit to put their mill on the roller system; Indianapolis Hominy Mills, Indianapolis, Ind., five pair Allis rolls, in Gray's noiseless belt frames, for their hominy mills—there are now quite a large number of the Allis rolls used for making hominy, and are giving excellent satisfaction in this line; Stein Bros., Springvale, Kas., a No. 3 four-break reduction machine, Gray's noiseless belt roller mills, purifiers, etc., to make a good roller mill; Turner & Redfearn, Good Thunder, Minn., a Gray's noiseless belt roller mill; Elk City Milling Co., Elk City, Kas., ten pair Allis rolls, in Gray's noiseless belt frames, and complete outfit for a roller mill; Shillips & Thomas, Kennedy, N. Y., a porcelain roller mill, in Gray's noiseless belt frames; Russell, Miller & Co., Bismarck, D. T., a noiseless belt roller mill; A. Pamburg, Rome, Wis., a Gray's noiseless belt roller mill. The following orders were received from prominent mill furnishers: Through Willford & Northway, Minneapolis, Minn., a Gray's noiseless belt roller mill for J. M. English, Hematile, Mo.; through Richards & Butler, Indianapolis, Ind,, eight pair of Allis rolls, in Gray's noiseless belt roller frames, for J. Maphis, Mt. Jackson, Va.; through the Great Western Manufacturing Co., Leavenworth, Kas., seven pair Allis rolls, in Gray's noiseless belt frames, for Messrs. Miller, Bowman & Co., Baker, Kas., and six pair Allis rolls, in Gray's noiseless belt frames, for another job they have under construction; through the George T. Smith, H. P, Co., of Stratford, Can,, six pair Allis rolls, in Gray's noiseless belt frames, for T. H. Wyman, Hawksville, Ont.; through the Richmond City Mill Works, Richmond, Ind., eight pair Allis rolls, in Gray's noiseless belt frames, for G. W. Bowen, Independence, Kas., and six pair Allis rolls, in Gray's noiseless belt frames, for Lukins & North, Atchinson, Kas.; through the Capital Iron Works, Topeka, Kas., a Gray's noiseless belt roller mill, for Henry Leighler, Valley, Falls, Kas.; through the Cockle Separator Co.. Milwaukee, six pair Allis rolls, in Gray's noiseless belt frames, for one of their customers. Edward P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have recently received the following orders for their justly celebrated engines, and have several more large orders coming in the near future: Bonesteel & Turner, of Springfield, D. T., a 14x36 Reynolds patent automatic cut-off engine, complete with boiler, heater, pump, etc.; Milwaukee Industrial Exposition, Milwaukee, Wis., a 12x36 Reynolds' patent automatic cut-off engine; Osceola Mining Co., Opegee, Mich., a pair of 20x60 hoisting engines, complete; Henry Glade, Grand, Island, Neb., a 14x36 Reynolds-Corliss engine; St. Louis Exposition, St. Louis, Mo., a 32x60 Reynolds-Corliss engine; Dennett Harvester and Machine Works, Milwaukee, Wis., a 14x36 Reynolds-Corliss engine; Pettit, Robinson & Co., Minneapolis, Minn., a 26x60 Reynolds-Corliss engine, complete with steel boilers, Reynolds' feed water heater and purifier, etc.; Washburn Hill Co., Minneapolis, Minn., a 30x60 Reynold-Corliss engine; J. W. Trowbridge, Wymore, Neb., a 10x30 Reynolds-Corliss engine, complete; Edward P. Allis & Co., are also furnishing a complete steam power for a large elevator at Ft. Williams, owned by the Canadian Pacific Railroad Co., and are putting in a 32x48 Corliss engine, steel boilers, etc.

SAYS a wit: "Last year I saw a watch spring, a note run, a rope walk, a horse fly, and even the big trees leave. I even saw a plank walk, and a Third avenue bank run; but the other day I saw a tree box, a cat fish, and a stone fence, I am now prepared to see the Atlantic coast and the Pacific slope."

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, No. 124 GRAND AVENUE, MILWAUKEE.

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For estimates for advertising, address the UNITED STATES MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, NOVEMBER, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for ($10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,500 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and 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 we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,5. 00

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 8.

A copy of Ropp's Calculator and the UNITED STATES MILLER will be sent to any address for one year for $1.00.

The New American Dictionary and the UNITED STATES MILLER sent postpaid to any address in America for $1.60.

DURING the year ending June 30, 1884, bolting cloth, to the value of $396,153, was imported, free of duty.

IMMIGRANTS arrived in the United States during the year ending June 30, 1884, to the number of 518,592, against 603,322 during the year ending June 30, 1883.

That valuable book "Moore's Universal Assistant and Complete Mechanic" and a copy of the UNITED STATES MILLER for one year will be sent to any address in America for $2.75. Order now.

THE Milwaukee Chamber of Commerce has reconsidered its resolution to withdraw from the National Board of Trade, and will continue with the National organization.

WE learn from the *Richmond (Va.) Mercantile and Manufacturing Journal* that a Mechanic's Institute is soon to be established in that city. It speaks well for the enterprise of the South when they give attention towards such projects. We believe that the Institute will be a success.

THE Northwestern Traffic Association has announced a winter rate on flour and grain, to go into effect Nov. 1. The rate is on a basis of 17½ cents per hundred from St. Paul and Minneapolis to Chicago, an advance of 2½ cents. The rate of 15 cents from points in Wisconsin below St. Paul is unchanged.

CONSIDERING the low price of wheat, the price at which bakers in the United States sell bread, is exhorbitant. In Chicago, for instance, a loaf, supposed to weigh about a pound, sells for 7 cents, while a 4 pound loaf sells in London for 12 cents. This is a singular state of affairs, and the only conclusion to be drawn therefrom is, that bakers are making great profits. It is full time that bakers came down in prices. If they do not do so soon, thousands will rush into the business, and then competition will certainly bring down prices.

THE UNITED STATES IS THE GREATEST MANUFACTURING COUNTRY ON EARTH.

According to Mr. Mulhall, F. S. S., a much-quoted English authority, the United States is the greatest manufacturing country on the globe, the value of its manufactured products in 1880 being, as stated by him, about $650,000,000 in excess of the value of the products of manufacture of Great Britain during that year. Our census valuation of products of manufacture in 1880 was $5,369,579,191. Of this amount the value of products consumed in the United States and disposed of in the course of our internal commerce was about $5,260,000,000.

But the total value of the exports of products of manufacture from Great Britain and Ireland to all foreign countries during 1883 was only $1,047,000,000, and the total value of the exports of products of manufacture from France was only $364,000,000. In other words, the census valuation of products of our own manufacture consumed in the United States during the year 1880 was five times the value of the exports of products of manufacture from Great Britain and Ireland during the year 1883, and more than fourteen times the value of the exports of products of manufacture from France during the same year.

The foregoing facts clearly illustrate the enormous magnitude of the internal commerce of the United States.

AMERICAN EXPORT OF BREADSTUFFS.

The value of our export of breadstuffs for the year ending June 30, 1884, was $162,544,715. Of this, 95.13 per cent. consisted of wheat, wheat-flour, corn and corn-meal. It is estimated by persons well informed in the grain trade that about 93 per cent. of the exports of bread and breadstuffs from the United States consists of products of our western and northern States. The exportation of corn (maize) fluctuates greatly from year to year. Since the year 1869, the annual value of corn exported has ranged from a little more than $1,000,000 to $98,000,000.

The export of wheat and wheat-flour during the last ten years have constituted 30.16 per cent. of the total quantity of wheat produced in the country, and the exports of corn and corn-meal have constituted only 4.52 per cent. of the total corn product The total value of the export of bread and breadstuffs has constituted 26 per cent. of the value of the domestic exports of the country during the last ten years. The following table clearly indicates the enormous growth of the exportation of bread and breadstuffs, especially during the last twenty-four years.

Year ending June 30—	Bread and breadstuffs
1860	$ 24,422,310
1861	72,152,366
1862	84,183 754
1863	89,180,332
1864	63,400,606
1865	53,941,231
1866	41,249,054
1867	41,288,804
1868	69,024 059
1869	53,724,154
1870	72,250,933
1871	79,381,187
1872	84.586,273
1873	98,743,151
1874	161,198,864
1875	111,458,265
1876	131,181,555
1877	117,806,476
1878	181,777,841
1879	210,355,528
1880	288,036,835
1881	270,332,519
1882	182,670,528
1883	208,040,850
1884	162,544,715

INSECTS WHICH INJURE GRAIN IN THE GRANARY.

The grain weevil (*calandra, or curculio granarius*). This belongs to the same family of insects as the curculio, which destroys plums. In its perfect state it is a slender beetle of a pitchy red color, about an eighth of an inch long, The female deposits her eggs upon the wheat after it is housed, and the young grubs hatched therefrom immediately burrow into the wheat, each individual occupying alone a single grain, the substance of which it devours so as to leave nothing but the hull, and the loss of weight is the only exterior evidence of the mischief that has been done. The adults also eat the grain. In Europe it has proved peculiarily destructive to stored grain. Roasting or kiln-drying the wheat effectually destroys the grub. The grain moth (*tinea grenella*). The angoumis moth (*anacampsis ceralia*), is a small moth, resembling the well-known carpet moth of houses, the grubs of which prey on stored grain. There are probably many other insects than the above injurious to wheat at various stages of its growth, but, unfortunately, practical farmers pay little attention to entomology, and are apt to confound not only one known species with another, but also those which are described with those which are not. An intelligent farmer would confer a great benefit on the community were he to study carefully the habits of all insects injurious to vegetation in his own locality, and make the results known. Insects injurious to the farmer appear to be increasing in all parts of this country, and it is very essential that their habits should be accurately studied, so that remedies may be devised. It is only by our becoming thoroughly acquainted with the character and peculiarities of our enemies that we can hope to overcome them. Mere guesses and random experiments rarely if ever prove of any benefit. The loss annually sustained by the country in consequence of the depredation of insects is exceedingly great, and is calculated by millions of dollars.

SPECIAL INDUCEMENTS TO SUBSCRIBERS.

If you are not already a subscriber to the UNITED STATES MILLER, now is your time to subscribe. We call your especial attention to our announcement on page 10. It may be summed up as follows:

We will send the UNITED STATES MILLER post-paid to any address in the United States or Canada for one year and a copy of Ropp's Calculator in plain binding for $1.00, or a No. 3 Calculator and the paper for $1.50; or a copy of Ogilvie's Popular Reading No. 3 and the paper one year for $1.00; or the books entitled "The Great Empire City" or "Fifty Complete Stories" and the paper for one year for $1.00; or the "New American Dictionary" and the paper for one year for $1.60; or "Moore's Universal Assistant and Complete Mechanic" and the paper one year for $2.75. Our readers should not fail to take advantage of these offers, which remain open until we announce to the contrary in our columns. All remittances must be made by postoffice money order or registered letter. Remittances made otherwise will be at your own risk.

WHITE BREAD.

A somewhat hackneyed subject this is to be sure, but many brains are so constructed that the only way to get truth into them is by hammering it in with repeated blows. So there are still a number of well-meaning people who are firmly persuaded that white bread, though pleasant to the eyes, is not so nutritious as the loaf of darker hue, which contains a percentage of bran.

The arguments of the "whole-wheat-flour" maniacs are too well known to require repetition, as indeed are also the contra-arguments of those who hold that the universal preference for white bread is justified by scientific facts.

All we want to here mention is a fact which seems to have escaped most of the disputants on both sides of the question. Not only does white bread contain more available, *i. e.* digestible, nutriment per pound than does its "colored brudder," but the use of the latter actually lessens the nutritive value of the other food taken at the same time.

Think that is rather fishy, do you? Well, it is a fact nevertheless, and this is the explanation of it: Bran is well known to have a marked effect in quickening the peristaltic action—in other words, it lessens the time of the food's passage through the body. The food is therefore removed from the action of the gastric juices before digestion is complete, and thereby its nutritive value is decreased.

The more a sensible man investigates the subject, the more firmly does he become convinced that bran has no business in flour, and that the beautiful white loaf made from roller-flour is by far the best in every respect. —*Roller Mill.*

Translated from the *Allgemeine Muehlen-Zeitung* for the UNITED STATES MILLER.

THE CONDITION OF THE GRAIN TRADE.

An examination of the grain harvests in the two hemispheres should satisfy everyone that the result in general indicates an average crop, while the principal producers, such as North America and Russia, which determine the prices on the markets of the world, show greater and better yield than in the years immediately preceding. India alone has a deficit worth mentioning, estimated at about 20 per cent., but which, in comparison with the gigantic surplus of nearly 80 million bushels, secured in the United States, hardly can be taken into consideration in the question of export and providing Europe with weat from across the seas.

The period for growth of grain was not very favorable this year, for after the chilly and rainy weather in the latter spring months, rust appeared in most countries during the critical period of formation of the berry; and, in consequence, everybody prophesied that this year's crop was to be considered as half lost. The contrary has happened. With very few exceptions all countries have secured a quantitatively full average crop; but the quality almost everywhere shows traces of the unfavorable condition of the weather during the formative period, as well as of the troublesome rust. "Abundant and poor" is a variation of the well-known expression of Reuleaux's: "Cheap and poor," which may be justly applied to this year's grain harvest, and in this circumstance the principal reason must be sought for the enormous tumbling of prices for all kinds of grain albeit the effects of speculation on this phenomenon is not to be underestimated. When the American grain trade offers its wheat to the European consumers at fabulously low prices for delivery at any time, and accepts the cheapest conditions of payment, as has been the case during the last weeks, there must be another factor at work than the large production; there must have existed, on the other side of the Atlantic, a speculation on future options, which finds itself disappointed in its expectations, and is now trying to get rid of its large reserve of wheat at any price, the expected failure of the crop not having occurred.

It is an ever recurring experience that the consumer, in the face of falling prices, discontinues his purchases in the same manner as, at a favorable opportunity, he often supplies his wants for several months in advance. The low prices this year are still harder for the producer, since, after all, the crop is not to be considered very large and quantitatively is much smaller than the one of 1883.

The following table, in which the crops of 1882 and 1884 are contrasted in figures, gives a very clear idea of these facts. It shows the influence of an over speculation, which tries to get rid of the stock on hand. Taking 100 as indicating an average crop, the results in the different countries during the two years is as follows:

	1884	1882	1884	1882	1884	1882
	Wheat		Rye		Barley	
Austria	103	111½	99	103	104	106
Hungary	104	157	98	108	103	120
Prussia	97	105	96	105	100	105
Saxony	110	105	95	95	100	100
Franconia and Suabia	107	120	101	95	113	125
Upper and Lower Bavaria	105	130	100	140	105	150
The Palatinate & Wetterau	90	110	65	95	120	110
Baden	90	100	60	92	100	90
Wurttemburg	99	110	89	100	107	110
Mecklenburg	105	120	110	120	105	100
Denmark	100	105	105	100	80	110
Norway and Sweden	105	105	105	105	102	100
Italy, South	78	110	...	...	66	...
" Upper	80	135	60	80	...	...
" Eastern	100	...	...	...	...	...
" Central	80	110	70	...	...	...
Switzerland	80	105	60	75	90	110
Holland	95	105	95	105	98	105
France	95	100	80	90	...	100
Great Britain	105	100	...	...	98	110
Russia, Esthonia	80	145	65	145	85	85
" Central	100	...	85	...	65	...
" Podolia	100	115	80	100	70	80
" Besserabia	125	130	130	100	130	120
" Kerson, Winter wheat	100	...	90	...	95	...
" Northern	90	...	80	...	63	...
" Poland	115	112	110	95	...	95
" Courtland	100	95	110	95	85	85
Roumania, Moldavia	125	135	105	90	115	90
Wallachia	112	120	102	130	100	100
Serbia	150	160	140	135	110	160
Egypt	100	...	...	...	...	...

The anxiety of the consumers strengthens the pressure on the prices tremendously and has, in reality, brought about the present extraordinary conditions in international commerce, which look suspiciously like a crisis and defy all experience. The argument of "over production" cannot stand in the face of crops that do not far exceed an average yield. During the last ten years very much better crops than this year's have repeatedly been harvested in Europe, and, nevertheless, the prices of breadstuffs remained 15 and 20 per cent. higher than to-day. The following comparison of prices of the two years, 1882 and 1883, is all the more drastic if contrasted with the above harvest results, when it appears that with an almost 20 per cent. more abundant harvest in both hemispheres the prices were 20 per cent. higher than at the present time. That was also the basis on which the business operations of the season of 1882-3 were developed.

The prices at the time of the grain market were:

		Wheat	Corn for May-June.
Vienna,	1882	9.15	6.00
"	1884	7.70	5.87
Berlin,	1882	171.50	—
"	1884	145,50	—
Paris,	1882	26.30	—
"	1884	21.10	—
New York,	1882	111.00	89.00
"	1884	89.50	61.00

The grain market this year does not seem to have the power of exercising any particular influence on the international trade. Speculation and still more the American unloading hold undisputed sway over the markets, and the bona-fide trade kept away from the market, so as to let the violent fluctuations pass by. In addition, there were missing on the Vienna grain market representatives of the importing countries, who, otherwise, by their influence regulate the level of prices. This time that influence had to be renounced in favor of American speculation, which is governed by the crisis in the grain business of the United States, and consequently incalculable as to its operations.

DUST COLLECTORS.

It has been but a short time since dust collectors were introduced into flour mills, but once having been tried their great value and efficiency was admitted and since then there has been a continuous demand for these machines. They have been found to be of value not only in flouring mills but in white lead factories, paint and powder mills, etc.

Although several machines have at various times been placed upon the market, the PRINZ DUST COLLECTOR, manufactured by the MILWAUKEE DUST COLLECTOR MFG. Co., o Milwaukee, Wis., has taken the lead and is generally believed to be the best machine for the purpose in the market. Those who have not seen the machines will readily understand their construction and operation by referring to the accompanying illustrations.

The machine is very simple in construction and is therefore not liable to get out of order. It has no dead air chamber which is liable to wear out soon and allow the air to enter, thus destroying the cleaning properties, allowing the cloth to fill up, preventing the e - cape of air, thus rendering the work of a purifier ineffectual or otherwise preventing a free ventilation. The cloth cleansing mechanism in the PRINZ machine executes its work by a successive jarring of the sections of the cloth (without moving the portion of the cloth thus being cleaned until the jarring ceases) combined with the air which is reversed on that portion of the cloth; the draught comes through the opposite way from which it enters the fan, and by this action the dust is deposited in the collector conveyor, and is discharged by it. The machines, having a great amount of cloth surface, have great capacity. There being no back pressure on the fans but little power is required to drive them. It is desired in mills because it does away entirely with those long spouts leading from purifiers to dust rooms, which give so much trouble by filling up, and it also does away with the cumbersome, dirty dust room with attendant spouts, which occupy so much valuable space.

Which of our milling friends have not heard of dust explosions in flour mills? The desire for a preventive of this liability to sacrifice human life as well as destroy valuable property, has long been felt. Insurance companies only secure losses originating from fire, and in numerous cases where mills have been blown up by dust explosions, without any trace of fire origin, the losses sustained have not been recovered from the insurance companies.

Those interested are well aware of the causes of dust explosions. There have been totally destroyed some of the finest mills in the country, where the explosion originated from fire sparks produced by fast running machinery, and the same coming into contact with air currents, loaded with floating particles of flour dust, in the long spouts leading to the dust rooms, spread the fire with such rapidity over the whole mill, as to render all efforts to extinguish it, useless.

By the use of a dust collector, the floating dust in dust rooms and attendant spouts is done away with. The dust being collected as soon as it reaches the machine, and the air discharged dustless, the danger of dust explosions is overcome. The importance of the dust collector is fully recognized by the leading insurance companies, who are assuming larger risks at smaller premiums on those mills using dust collectors.

The health of the miller, which is promoted by a pure and dustless atmosphere, together with the comfort of a clean mill, are matters certainly worthy of some consideration, not to speak of the large amount of material that is actually being saved by the use of the machine.

In order that the dust collector should work to the best advantage it is necessary that the connections with various machines should be properly made. In order to show this plainly the Milwaukee Dust Collector Mfg. Co., have recently published "A Treatise on Dust Collection," with many illustrations showing the method of connecting with various machines.

We present herewith illustrations showing method of connection with the Geo. T. Smith middlings purifier. The dust collector is placed on top of the purifier and connections made with the purifier fan. Figs. 1, 2 and 3, represent a sectional view of the connection and Fig. 4, the Smith purifier with dust collector attached. In Fig. 4, A indicates the air-box on the dust collector, of which there is also one on opposite side of that shown: B, B, B, air-spout connecting dust collector with purifier fan; C, indicates purifier fan; E, E, indicates stands for raising purifier fan journals. Figs. 1, 2 and 3, represent a sectional view of Fig. 4. It also exhibits a section of the balloon in dust collector (Fig. 2,) showing the cleaning mechanism, namely: knocking device, and introduction of "back-draught" current, and Fig. 3, shows the adjustable device for "back-draught" tube, which will be fully explained hereafter.

Fig. 1, letter "A" shows centre of balloon where the draught is applied drawing the dust laden air into dust collector and here the "back draught" is introduced through "back draught" tube, down into sections of balloon. Letter "B" shows knocking device underneath the balloon. Letter "C" represents the conveyor, into which the dust is being dropped, and by which it is carried off. Letters "G, G," show air spout connections with purifier fan. "E" indicates purifier fan. Letter "F" shows stands for raising fan journals. "D, D." shows openings through purifier deck into dust collector, allowing the air to pass freely to both sides of the balloon, which should be placed as near the ends of dust collector as possible.

Fig. 2, shows section of balloon, in which letter "A" shows where the "back draught" current is introduced through the "back-draught" tube into the section that is being cleaned. Letter "B" shows knocking device. Letter "C" shows outer surface of cloth to which the dust adheres. "D" shows the inner surface which is the clean side, and on which side the "back-draught" current is forced.

Fig. 2, shows adjusting device of "back-draught" tube, which must always be held closely in its seat in order to avoid a waste of the "back-draught" current. "A" shows the adjusting device pressing on the spring which keeps the tube snug down on section of balloon. "B" represents spring. "C" represents "back-draught" tube, which being loose and sliding is kept down on section of balloon that is being cleaned, as above stated.

The manner of making connection with many other machines is clearly illustrated and described in the *Treatise on Dust Collection* issued by the Milwaukee Dust Collector Mfg. Co., a copy of which can be obtained by those interested by addressing the Company.

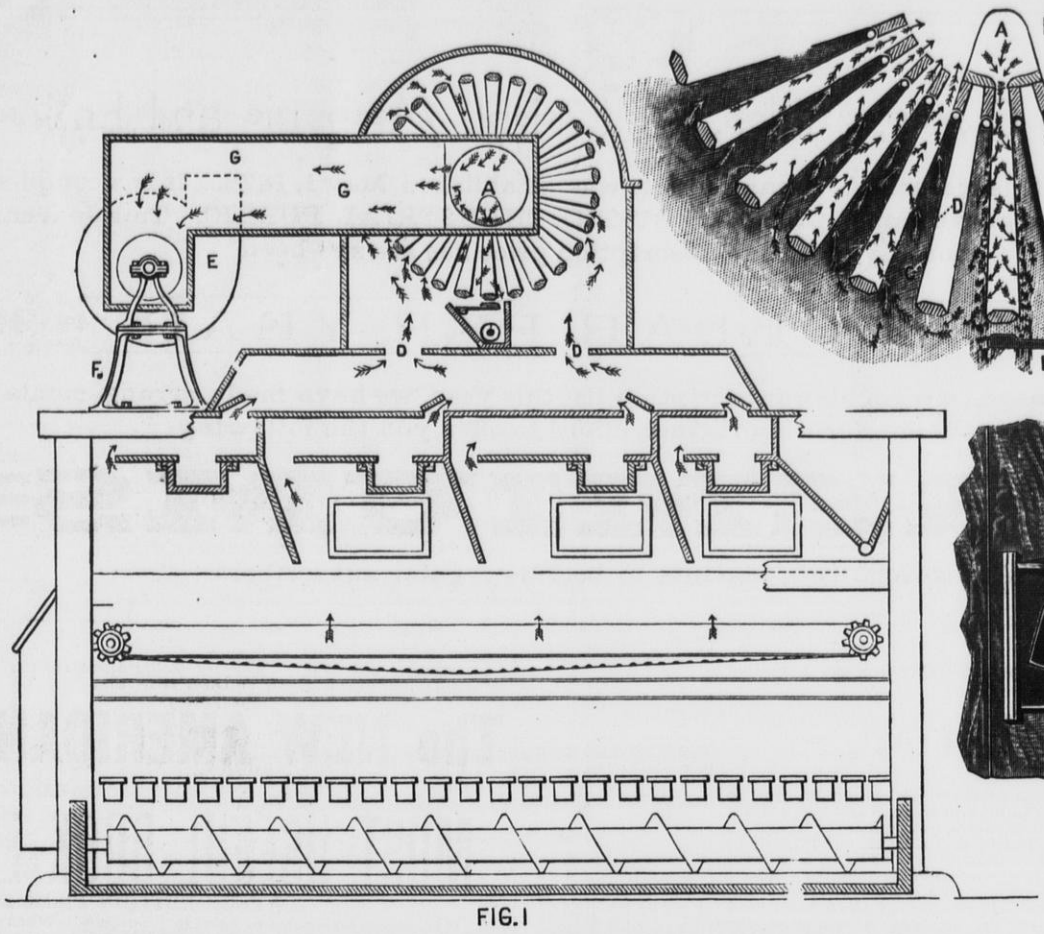

FIG. 1

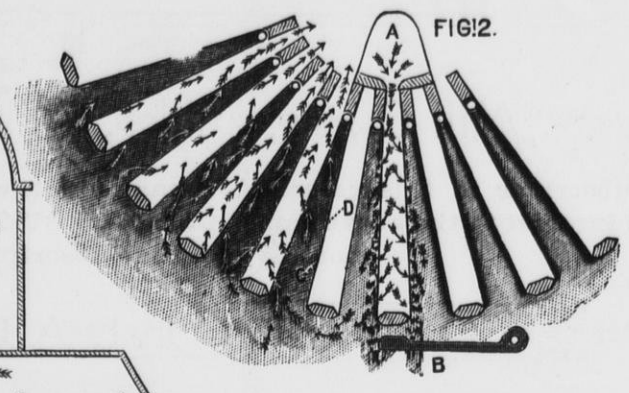

FIG. 2.

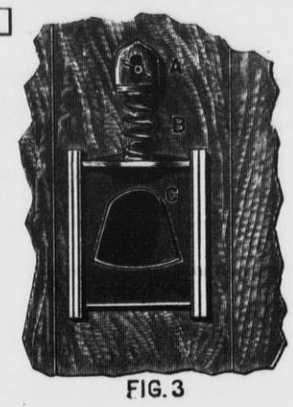

FIG. 3

FIGS 1, 2, 3—SECTIONAL VIEW OF DUST COLLECTOR IN CONNECTION WITH SMITH PURIFIER.

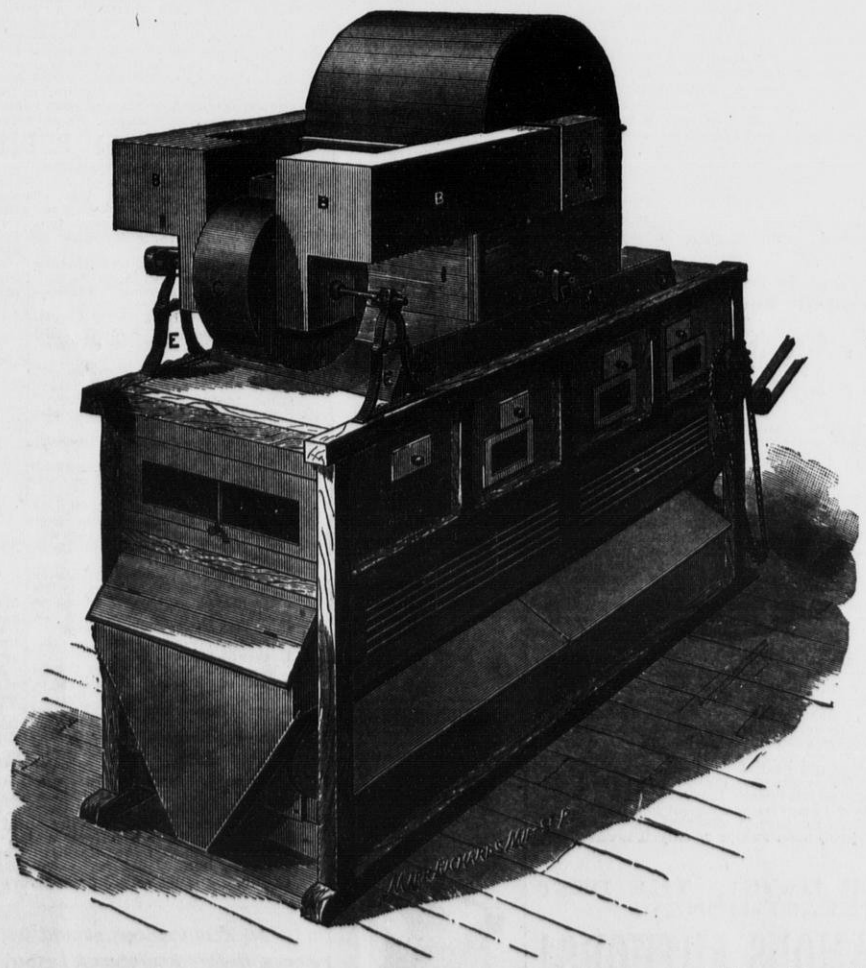

FIG. 4—DUST COLLECTOR IN CONNECTION WITH SMITH PURIFIER. (FULL VIEW).

A NEW ENGINE OF DESTRUCTION.

On Delamater's large derrick, at the foot of West Thirteenth street, there rested yesterday a nondescript-looking craft, which attracted much attention. This was the submarine Monitor, which has been constructed for Prof. J. H. L. Tuck, at the Delamater Works, and which has only recently been completed. A partial trial of the boat has been had in the North river, off the foot of Eighty-fourth street, and the craft has been taken out of the water to receive her final coat of paint and to receive some trifling alterations to her machinery.

When all complete, the professor intends to give a public exhibition of her ability as a destroyer by blowing up some old hulk or canal-boat in the harbor. The Delamater company, it will be remembered, constructed some years ago the celebrated submarine boat which, under the impression that she was a Fenian ram, attracted so much attention. The present boat, although somewhat similar in shape to that, and in the appliances for moving up and down at will, differs in the matter of propulsion, being moved by an electric motor. She also differs from that boat in the fact that means are provided by which those inside of her can come upon the outside and conduct their operations while the boat is beneath the surface of the water. That boat also was a ram; the present one is a torpedo-boat, pure and simple, and has the means of attaching her torpedoes to the vessel to be destroyed, and then moving off at a safe distance and exploding them. She is built of steel, is thirty feet in length, seven feet six inches in beam, and six feet deep. At the stern is a small propeller and a rudder of the ordinary shape, and on either quarter are fans by which her course is directed up or down.

In the center of the deck is a well covered with an air-tight hatch, and the sides of the well has an air-tight door communicating with the inside of the boat. When the captain desires to go on deck, he puts on a sub-marine armor and steps into the well, and, having closed the door, he connects an air-tube with his helmet. The tube is connected with an air-pump in the boat. He then opens a water-cock and allows the well to fill with water, thus equalizing the pressure above and below the hatch, which can then be opened, and then standing on a shelf in the well, he has his head and shoulders above the deck, and can have the free use of his hands and can also see in all directions. The steering gear is at hand as is also the gearing to the quarter fans. and so may move at will, up or down, forward or back. In the hold of the boat are storage batteries, about 15x20 inches in size, packed on both sides as close as possible. The machinery is an ordinary dynamo, consisting of a cylinder revolving between the poles of a magnet, and to this cylinder the propeller shaft is geared. The tillers are further aft, and there is a seat for the helmsman, just above which is an indicator, which shows the exact distance that the boat is be neath the surface.

The compressed air is stored in six-inch pipes, running around the inside of the boat, and there is an arrangement by which a couple of rubber tubes can be sent to the surface from a depth of twenty feet, and by this means a fresh supply of air may be obtained. The professor also proposes to use chemicals to revivify the air. The boat has a displacement of twenty tons, and is fitted with compartments so that water can be used for a regulating ballast. Force-pumps are attached to these, and they may be filled or emptied at will. The interior is lighted by an electric lamp. She is to have a torpedo at each end, fastened to the deck by a detaching apparatus. They are to be connected by a chain, and to have an electric wire attached to each. They are fitted with cork floats, which cause them to rise as soon as detached from the deck, and over the corks are powerful magnets, which will cause them to adhere to the bilges of the ship to be destroyed. The boat is then steamed off to a safe distance, and there an electric spark sent through the wire explodes the torpedo. The boat will, it is calculated, go at the rate of about eight miles an hour.—*New York World.*

THE trouble with these business partnerships in which one man puts his money in against the experience of the other man is that the moneyed man usually makes his individuality too largely felt in matters both great and small. If, however, he is naturally a smart, bright fellow, the business of the firm may prosper uninterruptedly, but, if, as is frequently the case, he is simply a pig-headed autocrat, things are likely to go to the dogs.

An illustration of how the inexperienced capitalist in a jug-handled firm can hurt the firm's business was furnished by a recent boiler explosion in a large neighboring town. The practical partner in the firm, and who, by the way, was the engineer, explained to his monied associate in the presence of a St. Louis boiler maker, that the boiler was unsafe, and ought to be displaced. This, too, was the emphatic opinion of the St. Louis man. The monied partner, however, thought he knew more about boilers than either the engineer or the visitor, and refused to give the order. In three or four days afterward the boiler blew up, wrecking the greater part of the mill.—Quidnunc in *the Age of Steel.*

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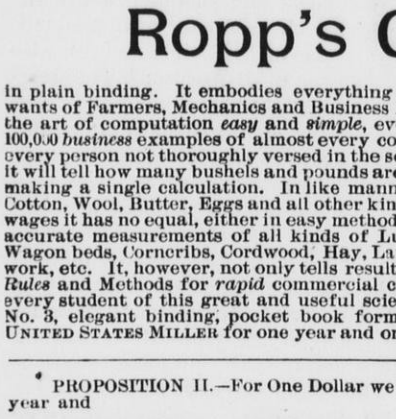

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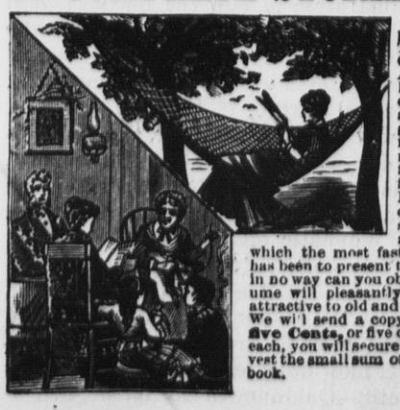

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A MILL MAN'S THRILLING ADVENTURE.

IN BED WITH A RATTLESNAKE.

An old man and a young one met in an uptown museum the other day and found mutual interest in discussing a cage of snakes. "If you would care to hear it," said the old man; who was old only inyears, his sturdy form indicating that not more than three-quarters of his life was behind him. "If you would care to hear it I will tell you a story about a snake, not one of these foreign reptiles, but a home-bred rattlesnake, too common, I suppose, to find a place here."

"Tell it," said the young man. "Snake stories are always interesting." And so it came about that 15 minutes later the two sat at a table in a quiet corner of a quiet restaurant, and the old man thus began:

"My name is Thomas Wilman, and I live in Philadelphia, where my son Harry is a prominent business-man. Thirty-one years ago yesterday I married, in Great Barrington, Mass., as pretty a girl as that village (famous for its pretty girls) ever sheltered. She had been well brought up, but had no fortune. I had $1,500 which I had made by running a saw-mlil. We were young and had the world before us, and we concluded to go West. Going West in those days didn't mean, as it seems to now. going beyond the Mississippi. Going into 'York State' was going West then. I had a cousin in Cattaraugus, a little village on the Erie Railway, 30 miles east of Dunkirk, and we concluded to go there.

" It was late in August when we reached Cattaraugus. My cousin gave us a hearty welcome, and I set about looking for a spot to build. Cattaraugus is a curious sort of a place. The village is surrounded by hills, and the wonder to me is that it dosen't slide down into the washbowl-like valley on the side of which it is built. A little creek runs through the village, and a mile to the west finds itself in a deep, narrow valley. with almost perpendicular sides, 100 feet high. This valley is called Skinner Hollow, and is one of the most picturesque spots on the Erie Road. I went down into the hollow prospecting. The sides, where they were not too steep, were covered with a heavy growth of first-class pine, and for miles around the hills were thick with the same timber. I saw there was money in a saw-mill right down in that hollow, and I built one on the stream, which I could see was a good sized creek most of the year. It is one of the branches of the Cattaraugus Creek, which empties into Lake Erie 30 miles west of Buffalo.

"I built my mill there and close to it a little house, so close, in fact, that the two joined. I took Katie, that is my wife, down there and we began house-keeping. That was well into winter, and I began logging at once. I hired a gang of men to help me, raised money by contracting my lumber ahead, and started in. We cut logs on the hill close to the mill, rigged up slides, and ran them down to the logway. I tell you it was music to me when the saw ripped into the first log and a clean-cut slab dropped away from the teeth. We had a little jollification. That was the first log ever cut in Skinner Hollow, and people drove miles to see it. Business was good. There was lots of snow, which made it easy work getting logs to the mill and drawing the lumber out to the village, besides giving me all the water I wanted. In fact water was running over the tail of my flume every hour from the time I turned it into the race till the middle of July. Then a dry spell came on, and I had to shut down for two or three hours every day to let my race fill up.

"But I didn't mind that. I had had a tip-top season and had made money. I had logs enough at my door to keep me busy for a year, and I knew where there were plenty more when those ran out. And, besides, I had two to look after instead of one. You wouldn't think if you'd see Harry, with all his refined ways and education, that the first music he ever heard was a saw tearing through a pine knot. But it's so. He was a pioneer's son, and knocked around a saw-mill till he was into his teens. Well, when business was slow I worked around the house, fixed up things here and there for Katie, so as to make her more comfortable. She couldn't have been more contented. She used to think that saw-mill was just about the pleasantest place in the country. Hour after hour she'd stay out there with me, and we'd keep up the conversation while the log was running back and stop when it went up to the saw. Dear me! Dear me! Why I can see her just as she used to look in those days in that little saw-mill just as plainly as if I stood there with her to-day. She used to jump on the log and ride up pretty close to the saw, and then, just as I would get scared and jump to drag her away, off she'd go. Nobody was ever happier than we were, and we have never been as happy since, though we've been pretty happy and are yet."

The yellow sunlight flickered into the room where the two sat, and the wine looked like blood as the dancing rays shone through it. The old man was lost in happy reverie, and the young man ventured to remind him that there was a snake story promised.

"True," said the old man, starting, "I'm just coming to that. I lost myself thinking of those old days. There was snakes then, and we had killed them. Rattlers used to come out on the ledges of rocks and lay in the hot sun. One or two had come around the mill, and I had shot one in our door yard. But we thought nothiug of that. People living in the woods or in wild places got used to things that would fill them with horror in a settled country. We expected to find snakes, and as long as they kept their distance, or gave us a chance to shoot them when they got too near, we didn't mind them.

"As I told you, I fixed up things around the house during slack time. One of the bits of furniture I knocked together was a bedstead. It was more like a broad lounge than a bedstead, for it had neither head nor footboard. One end was a little like a couch, and that was the head. We had some bearskins and and blankets to sleep on, and more blankets to cover us. It was a big improvement on the floor where we had been sleeping, and after a hard day's work handling logs, I used to think it about as comfortable a spot as I knew.

"Well, it got along into the fall and we began to have chilly nights. The equinoctial gave us a big rain, and for a fortnight I had all the water I could use. Then it got dry again. One afternoon, after several days of threatening weather, it began to rain. Hour after hour the rain came down till about 9 o'clock in the evening, when it suddenly cleared off and turned cold. It was late in October, and we kept a fire burning on the hearth nights, more for the baby's sake than for our own. Our bed was parallel with the fireplace, and stood out near the middle of the room. We had an English shepherd dog named Leo, which we took with us from Massachusetts. He was a black-and-white beauty, and my wife, who raised him, thought about as much of him as she did of the baby or me—at least I used to tell her so. The dog was fond of me, and I made a great pet of him. He was a noble fellow, and all he wanted was for me to whistle just once and he'd come. We let him sleep in the room at the foot of the bed. Sometimes in the morning I'd wake up before my wife, and I'd whistle just once to the dog. Up he'd come over the foot of the bed, and he'd wake Katie by licking her face.

"That night we were just going to bed when it turned cold. I threw an extra pine knot on the fire and went to the door and looked out. I shall never forget that look, for it was the last time I ever stood there and saw stars above Skinner Hollow. I closed the door and went to bed and soon fell asleep. I slept on the side of the bed nearest the hearth, and my wife slept on the further side, and the baby lay between us. For some reason I didn't sleep long, and when I waked up I couldn't get to sleep again. Finally I got out of bed and threw another knot on the fire. Leo was stretched out on the floor with his nose between his paws. He eyed me sleepily as I walked around the room and gave me a loving look as I stooped down and patted his head. I went back to bed aud fell into an uneasy sleep. All at once I wakened with a start. It must have been past midnight. I seemed to be fully awake the moment I opened my eyes, and such a sight as they rested on God grant they may never see again. I was lying on my left side facing my wife, who was lying on her right side, The baby lay on its back between us. As I opened my eyes a dark object glided down from off the baby, and just then the knot burst into flames and flooded the room with light. A rattlesnake fully five feet long, had slipped down from between my wife and myself, where it had been stretched out presumably to get warm, and, startled no doubt by some movement I had made in waking, had thrown itself into a coil on the bed at the baby's feet just opposite my knees.

"Somebody asks if life is worth living. I think it is as a general thing, butif life had many such moments as that, I should say emphatically that death was preferable. For a moment I lost my head. I did not move, fortunately, but I seemed to drift entirely out of all consciousness. For a moment only this lasted. Then my senses came back to me, and I felt that from the reaction I would probably tremble from head to foot. How I ever managed to keep my body rigid I don't know, but by an awful effort I did. I knew that to stir was death, perhaps for myself, perhaps for my boy, perhaps—my God, the thought was agony—for my wife. Outside I could hear the eaves dripping from the rain, I could detect the sound of water running to waste over the flume. To-morrow, I thought I'll have plenty of water again. To-morrow! Would I ever see to-morrow again? And if I did, would I not meet it alone. In spite of all I could do a shudder ran though my body.

"The snake felt it and raised its head. I could see its eyes glisten and dance in the firelight, and the bright rays glanced over the undulating coils. I could see that the snake was irritated, and I knew that it was liable to spring at any moment. Who would it strike? Either of us was within easy distance. It seemed to me that I could see the beginning of the muscular contraction which would precede the spring.

"All this, of course, passed in a fraction of the time I have occupied in telling it. My wife and boy slept on. I prayed that they might not move, for if they did I felt the snake would throw itself forward. I moved my head slightly. The snake's head again arose, and for the first time it sounded its rattle. Instantly my wife opened her eyes, and some way they rested on the snake. I could see that every vestige of color had left her face, but she did not move a muscle. Then her eyes slowly left the snake and came up to mine,

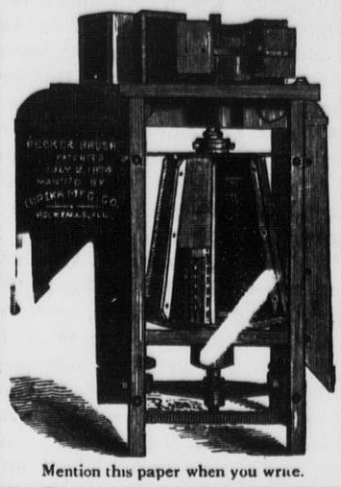
"Looking back over the nearly 30 years which have elapsed since then, I can see the look in her eyes yet. We had sometimes talked about meeting death together. Now it lay between us and in more terrible form than we had ever dreamed of. Yet the look of perfect confidence in me which my wife's eyes almost spoke, was something a man does not see more than once in a lifetime. That look seemed to say, for baby's sake, ond like a flash I became as cool as I am this moment. I could not speak, but my wife understood that she must keep perfectly quiet and jump. When the time came, slowly and with infinite care I raised my head till I could look down the bed to the floor beyond. My wife's eyes followed mine, and we both saw the dog. The hideous head of the snake swayed to and fro, and I knew that what was done must be done quickly. I looked at my wife, and she realized my plan. Her eyes filled with tears but gave consent. With a prayer for help I moistened my lips and gave one short, sharp whistle. The snake, I think, didn't know what to make of it. but the dog, Leo, did. As quick almost as thought he sprang to his feet and bounded on the bed. To this day I have never been able to understand why the snake did not strike when the dog moved, but it did not. As the dog's body rose in the air, my wife caught hold of the baby's garments and rolled ont of bed. I rolled out on my side, grasped my rifle, which stood at the head of the bed, and turned The dog and the snake were rolling together on the bed. I caught sight of the snake's head and fire, and the reptile was past doing harm. The dog staggered off the bed to the floor. shivered, moaned once or twice, looked from my wife to myself with more love than I ever saw before or since in any animal's eyes, and died.

At daybreak the next morning we buried the dog and started for the village. I sold my mill and house to a man who was visiting my cousin, and before sunset we were on our way to Massachusetts. I built another mill in the East, and we prospered and grew rich. Other children came to make our home happy, and there are grand children now. But I tell you, young man, that if poverty stood on one hand and even a glimpse of Skinner Hollow on the other, we would take poverty cheerfully and think we had made a good bargain.—*New York Times.*

MR. M. J. FEREN'S NEW MILL AT BISHOP AUCKLAND, NEW ZEALAND.

When the country was really overflowing with foreign flour made on a system superior to that adopted in our mills, our millers saw clearly that if they were to keep the foreign competition out of the country they must improve their style of manufacture. Amongst the millers who have taken this step is Mr. M. J. Ferens, Gaunless Flour Mills, Bishop Auckland, whose mill recently has been converted into an establishment working on the so-called "New Process." Having examined the different new systems Mr. Ferens entrusted the alteration of his mill to the firm of Messrs. Seck Bros., Bockenheim, Germany, a firm well-known for their milling machinery, and who have constructed the only three mills in Stockton working on the roller system. Mr. Ferens' mill contains the latest improvements, nothing being spared to make its results equal to those obtained in the famous Hungarian mills. The system adopted is the so-called "Gradual Roller System," by which the wheat is converted into flour, not by squeezing the flour out of the berry between stones, but by gradually breaking the wheat between rollers into the smallest possible pieces. By this process there are no impurities ground into the flour as with stones, there is no danger of heating the flour as between the stone and through a continual purifying and sifting process the produce is of a whiteness which qualifies the adoption of the brand of "Snow Flake." Beginning with the first apparatus which we meet on a visit through the mill we find a very ingenious contrivance for mixing several different sorts of wheat without the least manual labor. By changing the position of a few slides a mixture can be made of six different kinds of wheat, and that in any percentage of each which is required. The wheat being mixed passes then a series of screening machines (part of which are an addition to the existing ones), by which the wheat, being subjected to a continual action of rubbing, brushing, sifting, etc., is entirely freed from any impurities likely to injure the results. The process of grinding is done entirely by rollers taking the place of stones, which have entirely disappeared. There are seventeen sets of rolls in the mill. The rolls are of Seck's chilled iron, each pair forming the passage for a separate stream of material. The rolls,which are arranged on the so-called "horizontal type," are partly fluted and partly smooth. The process consists of two main parts, the one to break the wheat into smaller particles, called semolina and middlings, the other to reduce the middlings and semolina into flour. For the first process grooved rolls 19 inches in length and 9 inches in diameter are used, six pairs of rolls being adopted; for the latter (the reducing process) we find quite a number of smooth rolls of the same size. Following up the way which the wheat takes in the first (the break) process, we find it passing six times between grooved rolls with a sifting machine covered with wire after each pair of rolls. The results from this break process consist of a small percentage of flour, a large percentage of middlings and semolina, and finished bran. This bran produced on rolls is not so much cut up as the bran produced on stones, and is quite clean, all particles of flour being scraped off. The middlings and semolina from the break process pass now a number of machines called "middlings purifiers," consisting of a combination of sieves and exhaust fans, by which all impurities mixed with the middlings, and which consist chiefly of small particles of the skin of the wheat, are drawn away and prepare the middlings and semolina, which form the real kernel of the wheat, for their conversion into flour. In Mr. Ferens' mill we find eight of these mid dlings purifiers. The middlings and semolina go then on to smooth chilled iron rolls passing them six times, with another dressing and sifting machine after each passage. The sifting machines, called "centrifugal flour dressing machines," consist of a slowly revolving cylinder covered with silk, through the meshes of which the flour is thrown by a number of beaters inside the cylinder, revolving at a speed of about 180 revolutions per minute, and which, by causing a current of air, prevents the impurities mixed with the rolled middlings from passing the meshes of the silk and spoiling the flour. This process of rolling and sifting is repeated six times. As a matter of safety we find another rolling machine put up, which all finished flour must pass before it is taken off in sacks and ready for sale. Comparing this new system with the old stone system, and considering that a grain of wheat has to be brought mechanically about thirteen times up and down through the whole building, the new system at first may look rather complicated. But when watching the way the wheat takes a little closer, we find the whole process the most simple thing. There is not the least manual labor about the mill, except in taking the finished produce off in sacks, and the wheat is not touched after being taken from the roller into the grain hopper until it is converted into a product ready for sale. The system introduced into Mr. Ferens' mill is based on the same principle as that by which the famous Hungarian flour is produced, the firm of Seck Bros., having introduced their system into numerous continental mills. The whole establishment and its results speak highly for the enterprising spirit of its proprietor (Mr. Ferens) and the engineering firm of Seck, and is a further step in the direction of keeping foreign flour out of our country and providing our markets with home-made produce.—*Auckland Times and Herald.*

THE great drainage scheme now being prosecuted in Florida by the Disston Company is making great progress, says an exchange. The inconveniences connected with the work have been many and hard to overcome, but now the dredge-boat assigned to the Caloosahatchie portion of the work is doing better and more effective work than ever before. The first cut through from Fort Thompson to Okeechobee, making a canal almost on an air line 22 feet wide and 5 feet deep, has been completed, and the dredge-boat is engaged in making a second cut, having a beautiful canal in her wake 46 feet wide, which cut is expected to be completed early in 1885. This 46-foot canal will make a heavy draw on the waters of the lakes and marshes of the upper Caloosahatchie valley; so much so, it is claimed, that no overflow of long duration need ever be anticipated.



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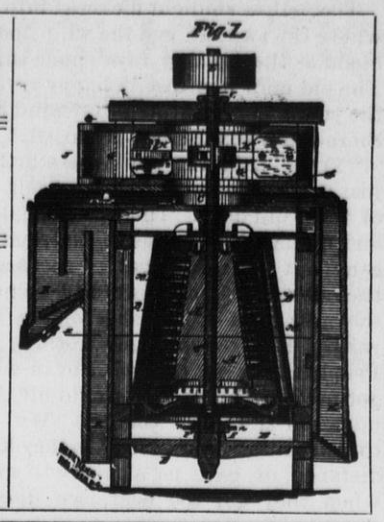

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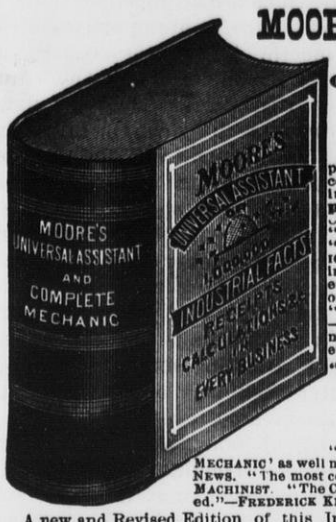

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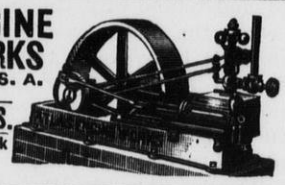

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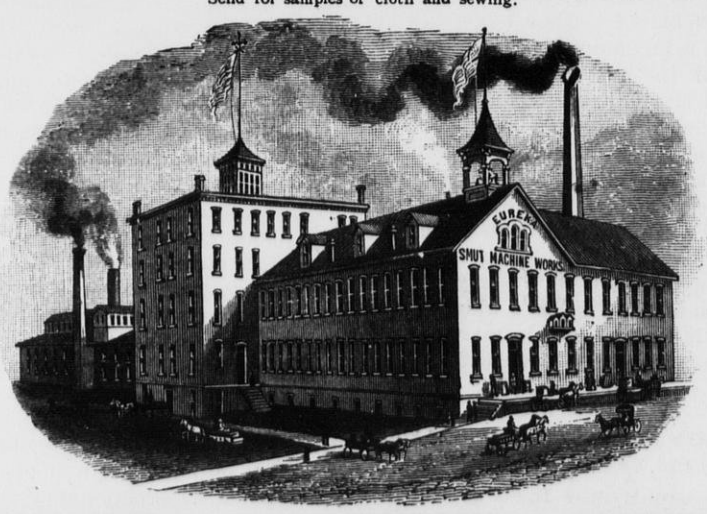

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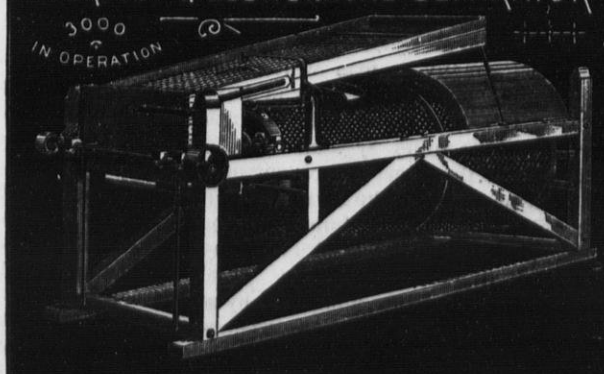

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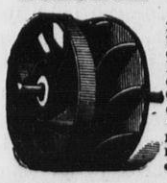

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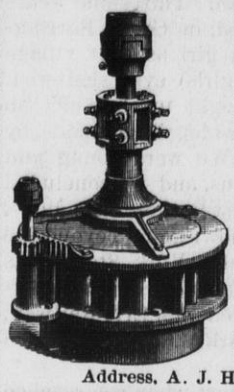

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Items From Our German, Austrian and French Exchanges, Translated and Condensed for the Entertainment of the Readers of "The United States Miller."

THE PATENT UNION.

On the fourth day of July last the international union for the protection of property in inventions started into life, composed of the following states, viz.: Belgium, England, France, Holland, Italy, Portugal, Switzerland, Sevria, Spain, Brazil, Guatemala, Salvador and Tunis. It will be noticed, that among the several nations, prominent by reason of their industrial progress, still missing from this list, is the United States. The advantages to be derived from a membership in the Patent Union, particularly to young industries, are numerous and apparent. One of the principal of these is that it is sufficient for a citizen in one of the states of the union to make application for a patent in his own country in order to secure the priority in all the other countries during a period of six months. Considering that obtaining patent in ten of the industrially most important countries requires an outlay of about $900, it is easy to understand the benefit accruing to the applicant from having six months in which to meet this expense. Another incidental advantage is that a citizen of a state participating in the union, who secures a French patent is entitled to manufacture his wares anywhere and import them into France without thereby forfeiting his patent, as heretofore. An American inventor, on the contrary, who desires to protect his industry in France is obliged to let his invention become common property after two years, or to erect factories for its manufacture in France, which alternative frequently offers insuperable difficulties. In consideration of all this it is to be hoped that the government of the United States may be induced to make speedy arrangements to become a member of the International Patent Union.

SUBSTITUTE FOR MILL-STONES.

The old fashioned mill-stone is being replaced by a substitute that answers all the requirements and in form is identical with mill-stones. Such a mill plate is made of several hardened steel plates, and is said to work in a really surprising manner. The work of a pair of mill-stones 50 cwt. in weight may be as successfully executed, both as to quality and quantity, by a pair of such plates that only weigh ¾ cwt., and it is evident that a runner weighing 25 cwt. and making 120 revolutions in a minute must require a very much greater driving power than a mill-plate weighing less than 50 pounds. The durability is claimed to be greater than stones, while the cost is only a tenth part of the price of the latter. These mill-plates, called Victoria Mills, are put on the market by H. Jung in Eisenach, Germany.

AGRICULTURAL CONDITION OF FRANCE.

By reason of the existing laws of inheritance in France, the division of the ground into minute subdivisions is going on more rapidly than ever. The number of farms that are unable to maintain cattle, is daily growing larger. On the other hand, the wages of farm laborers has for years been relatively too high, and as there is no prospect of their being lowered, the result is that France can no longer produce as much grain and meat as is needed for home consumption. Being thus compelled to import from foreign countries and affected by the general decline in prices in the markets of the world, agricultural pursuits in France are daily getting less remunerative, and in many cases, particularly when the ground is mortgaged, the ownership of a farm leads to financial ruin. While, for instance, a quarter of wheat must bring 25 francs in order to pay for raising it, the price vacillates between 19 and 23 francs, and the rents of real estate are falling more and more, so that they now frequently are only from a fourth to one-half of what they were in the years between 1865 and 1875. These evils, according to the *Austro-Hungarian Miller*, can only be obviated by the formation of associations among the farmers for common purchase and use of machinery, erecting dairies and cheese factories, dealing in fruits, manufacturing sugar, etc.; furthermore, by lowering railway freights on native natural products in internal commerce and for export, by regulating by laws the agrarian credit, and, generally, by instruction in better farming methods and the manner of driving up the laboring power to its highest pitch. In order to relieve the financial distress of the agricultural population, the French government has decided on an increase of import duty on foreign cattle and reorganization of charges on ships.

THE CROPS OF THE WORLD.

The well-known yearly publication of *Estienne*, which contains a review of the result of the harvest in all grain producing countries of the world, according to latest available reports, has just been issued in Paris. The following is a summary of its statements:

In the United States the crop is above the average, and the quantity is better than in the spring. Oats, rye and barley are also of good quality, and, as to quantity, an average yield of these grains is assured. The corn crop, which is very late this year, is estimated at 1,800,000,000 bushels; the wheat crop is officially calculated at 480,000,000 bushels, and on the New York produce exchange, at 500,000,000 to 525,000,000 bushels.

India has this year had an abundant wheat crop, which will yield an excess over home use of nearly fifteen million centnerweights of 100 kilograms for export.

In England the wheat crop is announced to be above the average for ten years, and is estimated at 11,500,000 to 12,000,000 quarters. The other kinds of grain are held as an average crop.

As to Germany, a larger yield is expected than in the spring, and the importation will be smaller than during 1883.

From the lower Danubian countries the report is very favorable, and the result in the principal kinds of grain is almost above the average. Roumania and Servia are capable of exporting.

Switzerland has a crop which indicates the need of the same import as in former years.

Spain, after several poor years, has at last obtained an average crop.

Holland and Belgium will import no more than in the sprins.

In France, reports from 88 departments are on hand. The crop in 34 is very good, in 22 tolerably good, in 15, medium, and in 17 poor. Of barley, it has a small crop, and of corn an insufficient one. The wheat, apparently being an average crop, France will be obliged to import about 15,000,000 to 20,000,000 hectolitres. (2.83 bushels.)

In Russia, the crop is reported as closely approaching the average, and the aggregate amount available for export may be put down at 35,000,000 tschetverts. (5.95 bushels each.)

Austria-Hungary has a good crop, but its quality is not all that could be desired. The surplus for export will be about the same as from the harvest of 1882.

At the end of the work will be found a tabular view of wheat importation of different countries during the last ten years. The total yearly import in England was 24,000,000, cwt of 100 kilograms, France, 11,000,000; Belgium, 3,000,000; Switzerland, 2,500,000; Italy, 2,500,000; Holland, 1,500,000.

TECHNICAL VOCABULARY OF THE PRINCIPAL TERMS AND WORDS USED IN MILLING.

With equivalent words in English, French, German, Spanish and Italian.

(*From the Journal de la Meunerie, and other sources.*)

ENGLISH.	FRENCH.	GERMAN.	SPANISH.	ITALIAN.
Hopper	Boisseau	Behaelter	Cajo	Cassone
Receptacle holding the feed of different machines, or holding the different finished or unfinished products of a mill, like wheat, flour, offal, etc.				
Brush	Brosse	Die Buerste	Cepilladora	Spazzolatrice
Apparatus used for removing the dust adhering to wheat, or for removing the floury particles which adhere to the bran.				
Wheat Brush	Brosse à Blé	Die Getreide-buerste	Cepilladora de Trigo	Spazzola da Grano
Machine for cleaning wheat, i. e., to remove the dust, the beard, and other parts of the outer skin of the wheat berry which do not cling firmly to the latter.				
Bran Duster	Brosse à Son	Die Kleien-buerste	Cepilladora de Salvado	Spazzola da Crusca
Machine for removing the floury particles as much as possible from the bran.				
To Break or Granulate	Broyer	Shroten, Brechen	Quebrar	Macinare
To reduce the wheat to a number of smaller pieces, but leaving the bran as intact as possible in order to remove the latter in dressing machines and purifiers.				
Granulation	Broyage	Der Schrot Process	Quebradura	Macinato
The breaking process.				
Stive Room Dust Chamber	Chambre à Poussière	Die Staub-kammer	Cuarto de Polvo	Camera da Polvere
Settling chamber in which are collected the impurities carried away with the air from the fans of the wheat-cleaning machinery, or the stive and light fluff which is drawn off the purifiers, etc.				
Dust Collector	Collecteur de Poussière	Der Staub-faenger	Collector de Polvo	Collectore da Polvere
Automatic apparatus for collecting the dust, stive, etc., from purifiers and other aspirated machines, in order to avoid waste and to keep the mill clear from suspended flour dust which is injurious to the workmen, and liable to cause dangerous explosion.				
Horse-power	Cheval-vapeur	Pferdekraft	Caballo	Cavalli
Unit employed for valuing the force of prime movers. It is the force which can lift 550 lbs. one foot high in a second.				
To Split or Bruise	Comprimer écraser	Spalten, Quetschen	Comprimir	Comprimere
To split the wheat along the crease in order to facilitate the removal of the germ and crease.				
Belt	Courroie	Der Riemen	Correa	Cigna
To Grind	Moudre	Mahlen	Moler	Macinare
To reduce grain to flour; to reduce a substance to powder.				
Damper	Mouilleur	Netzcylinder	Mojador	Bagnatrice
Apparatus for moistening the grain after cleaning and before grinding.				
Feed Hopper, Shoe	Tremie	Das Rumpf-zeug, der Ein-lauftrichter	Tolva	Tramoggia
A wooden or sheet-iron receptacle, generally made in the shape of an inverted pyramid, used for distributing an even feed of wheat, meal, middlings, etc., into the respective milling machines.				

PLEASANT PARAGRAPHS.

SHUST AS CLEAR AS MUD.—"I oxplain it all to you," said one of the partners in a furniture house in Western Michigan, which had its paper protested. "You see I and my brodder Shake vhas bartners. We each draw $20 per week und we haf money left to bay all our debts and keep up our stock. Shake he go oafer to Chicago, and eafery body asks him if we make some difidends und how mooch. Vhen he comes home he says we doan' shtand oop mit odder houses if we doan' make some difidends. Dot look all right to me. We haf two tousand dollar laid away, und I take half und Shake half. Vhen some drafts come Shake doan' like to bay, und I feels shust dot vhay, too. If you haf some difidends, dot vhas all clear for you, und you doan' put him back in der firm. It vas a leedle mixed oop, und I guess we like to sell oudt."

"So YOU think John is becoming a great man in the city?" said a farmer, speaking of his absent son, to a companion of the youth.

"Great man! I should say so. Why, there ain't a bar-keeper in the city, hardly, that he don't call by his first name."

A CHICAGO girl on a visit to New York threw her slippers at a cat last night, and the telegraph has since been deluging the country with the frightful accounts of an earthquake.

"TALK about your gallant police force," sneered a stranger to Fitzgoober. "I ran one of them nearly to death last night."

"What for?" asked Fitz.

"Because," answered the visitor, "I didn't care to be arrested in a strange town."

"Oh, I see, now; you were in front of him!"

"Of course I was. What d'ye suppose I wanted to get behind him for?"

HOUSE RAISING.—"Chicago is a great city," remarked one traveling man to another, as they got off the train in that town.

"Yes, it's a big place. Did you ever see them raising houses and building the first story last?"

"No; do they do that?"

"Yes, all the time. Why, some time ago they raised the whole Tremont House, with four thousand jacks."

"How many?"

"Four thousand?"

"Thunder! It didn't take that many, did it? By gravy, I saw a fellow down in Cincinnati, about a week ago, go into one of the biggest establishments there, and I'm a sucker if he didn't raise the whole house with two jacks. Prettiest game of bluff I ever saw."

The other man gave Cincinnati the lead, and Chicago came in a very fair second.—*Merchant Traveler.*

FORGOT THE MAIN FEATURE.—The other day while Major Dodridge was sitting in his dooryard the gate opened and a strange looking man hastily approached.

"Is this Major Dodridge?"

"Yes, sir."

"Of the Eighth Arkansaw during the war?"

"Yes," beginning to look with interest at the stranger.

"Don't you remember me, major?"

"No, I can't place you."

"Take a look at me," shoving back his hat.

"Don't remember that I ever saw you before."

"I am Hank Parsons!" exclaimed the man, bracing himself as though he expected the major to rush into his arms.

"Don't recall the name," said the major.

"Is it possible? I did not think you would ever forget me. I'll refresh your memory. At Shiloh, while the battle was raging in murderous fury, I found you lying on the field shot through both legs. I took you on my back and carried you to a spring in the shade. Now don't you recollect me?"

"Let me see," mused the major. "I remember having been wounded; but I can't recall the fact, if it be a fact, of any one taking me to a spring."

"This is, indeed, strange," said the disappointed man. "I looked forward to meeting you with such anticipations of a warm greeting. Well, well! The world has indeed reached its ungrateful age. The occurrence is as fresh to my mind as though it had taken place yesterday. I gave you a drink of whisky and—"

"What!" exclaimed the major, springing to his feet. "Gave me a drink of whisky! Oh, yes, I remember now," seizing the man's hand. "O, I'll never forget that drink! The whisky was so new that corn meal was floating round in it, but we enjoyed it. Remember you! Why, I should cavort. Why didn't you guard against possible embarrassments by mentioning some of the main features of the occurrence?"—*Arkansaw Traveller.*

AN Austin colored man, with protruding eyes, rushed into Justice Tegner's office and exclaimed: "I wanted Cal Jones, who libs next door to me, put under a million dollars bond ter keep de peace." "Has he threatened your life?" "He has done dat berry ding, He said he war gwine ter fill the next niggah he found after dark in his hen house plum full of buckshot."

AT a recent suit in New York, in which the defendant was a bankrupt, the plaintiff's lawyer put the question: "How many times have you failed?"

"Dot ish mine own pisniss," answered the son of Israel.

"Ah," retorted the lawyer, "how long have you been in that business?"

"OH, my child, how did your face become so bruised? Come to mamma and tell her all about it."

"I-I-I was over 'cross the r-o-a-d, playin' with Mis' Howe's little g-i-r-l; boo-hoo-oo-o."

"And did she hurt you like this?"

"Y-y-y-y-e-s."

"Well that was real naughty in her. What did she do to little Georgie?"

"Sh-sh-she knocked me d-o-w-n, an-an-and then she hit me w-wi-with a b-r-i-c-k, and pounded me w-with a b-r-o-om-s-t-ic-k."

"Oh, dear, what a terrible child. Well, don't cry any more, Georgie. What were you doing when this happened?"

"Pl-pl-playin' w-we w-a-s m-a-r-r-i-e-d."

LE coin du feu: What is woman? For a painter, a model; for a doctor, a subject; for a peasant, a housekeeper; for a Parisian, a dowry; for a naturalist, a female; for an Albanian, a beast of burden; for a Roman, a citizeness; for a schoolboy, an angel; for an honest man, a companion.

"COME here, Lucy," said an Austin father to his 11-year-old daughter, who was champing a gum-drop, and rocking her doll to sleep; "come hither, girl." [She came.] I've a notion to box your ears for talking to Tommy Jones over the gate. What do you mean by flirting with the boys?"

"Pa, we are not flirting. Bye O Baby. Now you go to sleep, dolly, like a good little girl. No, father, ours is no mere frivolous flirtation."

"I suppose," said the father, giggling at the absurdity of the idea, "you are engaged."

"No; we are not engaged; but, pa, you might aid us in carrying out the desire of our young hearts. It would make us so happy."

"Want to get married, do you?"

"Oh, no; we were married two months ago. A divorce is what we are after now."—*Texas Siftings.*

A RECONNOITERING EXPEDITION.—A young negro man looked in at the window of the Atlanta police station, and anxiously inquired: "Captin', is you alls got Bill Davis in de callyboose yit?"

"Yes; do you want to see him?"

"No, sah. I dess wanted ter kno' whudder I cood go down ter his house ter-night."

"Well, you can ask him."

"I don't wanter ax 'im; I dess wanted ter kno' ef he wuz hyar, an' gwinter stay in!"

"What do you mean?"

"Well, boss; I'se co'ting Bill's gal, an'—an'—yer see, I'se de berry same nigger what he busted down er panel ob fence wid las' Chuesday night!"

He was assured that Bill was safe for the night.—*Georgia Cracker.*

A SCATHING DENUNCIATION.—John Randolph's denunciation of Henry Clay, in a seeret session in 1825, was so scathing that the victim could not answer, but sought revenge through a challenge. Randolph, pointing his long finger at him, said: "This man (mankind, I crave your pardon), this worm (little animals, forgive the insult) was raised to a higher life than he was born to, for he was raised to the society of blackguards. Some fortune, kind to him, cruel to us, has tossed him to the Secretaryship of State. Contempt has the property of descending, but she stops far short of him. She would die before she would reach him—he dwells below her fall. I would hate him if I did not despise him. It is not what he is, but where he is that puts my heart in action. That alphabet that writes the name of Thersites, or blackguard of squalidity, refuses her letters for him. The mind which thinks on what it cannot express can scarcely think on him—a hyperbole for meanness would be an eclipse for Clay."—*B. P. Poore in Boston Budget.*

ITEMS OF INTEREST.

TRAMWAYS AT RIO JANEIRO.—The Brazilian capital is particularly rich in tramways, there being no less than 133¾ miles within the city and suburbs. The four largest of these tramways are the Botanic Gardens, 22½ miles; the St. Christo, 27½ miles; the Villa Isabel, 17 miles; and the Urbain, 28½ miles. Altogether the 133¾ miles of tramway existing in Rio de Janeiro and the neighborhood are owned by nine companies. The rolling stock placed by these companies upon the lines, comprises 554 carriages, of which 363 are used for the conveyance of passengers, and 191 for the carriage of goods. The traction service is carried on by mules and horses, and there are no less than 4,921 of these animals at work on the lines. The working staff comprises 1,482 persons. The number of passengers conveyed over the lines has averaged 35,532,926 per annum. The net profits realized upon the four principal lines last year were as follows: Botanic Gardens, £63,025; St. Christo, £62,165; Villa Isabel, £17,516; and Urbain, £43,666. Two of the smaller tramways were worked at a slight loss last year.—*Engineering.*

THE *Mechanical World*, after pointing out the necessity for a cheap disinfectant for workshops and places where many people are likely to congregate, gives on good authority, the following plan for preparing a cheap and effective disinfectant—something that will quickly neutralize offensive smells: "Take half a drachm of nitrate of lead dissolved in a pint or more of boiling water, and dissolve two drachms of common salt in a pail or bucket of water. Pour the two solutions together and allow the sediment to subside. The clear supernatant fluid will be a saturated solution of chloride of lead." This can be sprinkled around in places to be disinfected. It is said a cloth dipped in this solution and hung up in a room will instantly sweeten the atmosphere. This is worth a trial in many industrial establishments, where the health of the operatives is endangered by evil odors.

DIRECTING PARTITIONS AND FLOATS OF TURBINE WHEELS.—The directing partitions and floats of turbines should be of sufficient number to give to the velocity of the water their own direction. The distance of any two consecutive floats or partitions apart should not be at any point more than 2.34 inches to3.12 inches, measured along the normal to the surfaces, and generally it is made less. However it must not be made too small, for then the friction of the water against the solid sides would be too great.—*Bresse.*

SLATE for roofing originally costs, per square, $4.50, and lasts at least 60 years; boards cost $2.00, and last 8 years; shingles cost $4.00, and last 12 years; corrugated iron $6.00, and lasts 20 years; and tin costs $6.50, and last 20 years. Making the average cost per annum as follows: Slate 7½ cents; boards. 25 cents; corrugated iron, 30 cents; tin 32½ cents; shingles 33⅓ cents. Making slate, without reference to other considerations than original cost and life, almost four times cheaper than boards, more than four times cheaper than corrugated iron and tin, and nearly five times cheaper than shingles.—*State Trade Journal.*

GERMAN FACTORY REPORTS.—The reports of the German factory inspectors for the year 1883 have just been published, and contain some figures of interest. At the time the report was made up, the general condition of the many industries was considered good. In Prussia some works, particularly sugar factories, showed an increase in number, and every kind of industry, except brick and glass, was flourishing. The industrial works of Berlin showed a marked increase in both steam power used and the number of artisans employed. The increase in child labor employed equaled 11 per cent., but of this increase only 2 per cent. were children under 14 years of age, and the tendency, as shown by the reports, was to employ less of this labor every year. The complaints of immorality among the female operatives were diminished and more care was taken in the separation of the sexes. An increase in the number of accidents was noted in every part of Germany, and this was attended by a larger percentage of fatal injuries. The great good of having inspectors to which employers and employés could refer disputes, was illustrated by the numerous cases in which inspectors caused settlements to be made without appealing to the courts. The general condition of the working people was fair, and the only drawback to the report was the fact that the manufacturers made very little money during the year.

FIRE RISKS IN MACHINE-SHOPS.—Establishments for building steam engines and boilers are, in the construction-shops for the former, probably the best type of the machine shop that exists. Here the fire risk is purely a machine making risk; and while flame occurring would in a small degree destroy the substance of the machine, it would decrease its adaptability to its purpose. The danger from friction is considerable. Most of these works, however, have boiler shops attached that form the weak spot of the place, unless placed at considerable distance, when the boiler shop could and should bear its own burden of many forge fires and red-hot bolts flying about in all directions, held by tongs in the hands of boys. A foundry is, however, much more likely to be immediately adjoining a steam-engine shop than a boiler shop would be. It would, therefore, be correct to consider most of the establishments as subject only to this foundry risk. It is rarely that a pure machine shop of any considerable size is entirely isolated from one or the other of the two adjuncts. The Chronicle fire tables give 2.30 per cent. per annum as the propertion of foundries and machine-shops taking fire in the United States during the nine years of observation, 1875-1883 inclusive.—*Engineering and Mining Journal.*

ACCORDING to experiments carefully made at Houghton Farm, N. Y., it seems that an exact bushel of corn is seldom sold. The standard bushel, 56 pounds, should be of dry grain, while the 56 pounds of harvest weighs when dry only 52 pounds, and when kept a few months sinks to 46 often, while corn varies in weight with the wet and dry condition of the weather. A yield of 100 bushels per acre by weight, say those who have studied the above experiment, weighed thirty days after husking, would show a great falling off in six months. About 65 pounds of new shelled corn, it is found, is required to make 50 pounds of dry corn.

EXPERIMENTS on an extensive scale have been made by the Dutch government to ascertain the strength of iron and steel girders. The soft steel girder proved to be 22 per cent. and the hard steel girders 66 per cent. stronger than the iron girders. It was pretty well established that the strength of steel girders is about the same for the two flanges if they are made alike in section.

A CONTRIBUTOR to a London scientific paper says that a very simple and effective way of coloring a meerschaum bowl is by painting it while you are smoking, and after it becomes warm, with the creamy surface of good milk (or with cream) by means of a common hair pencil, which brings out the brown and yellow colors beautifully, and as if by magic.

The Largest Mill Furnishing Establishment in the World.

RELIANCE WORKS,

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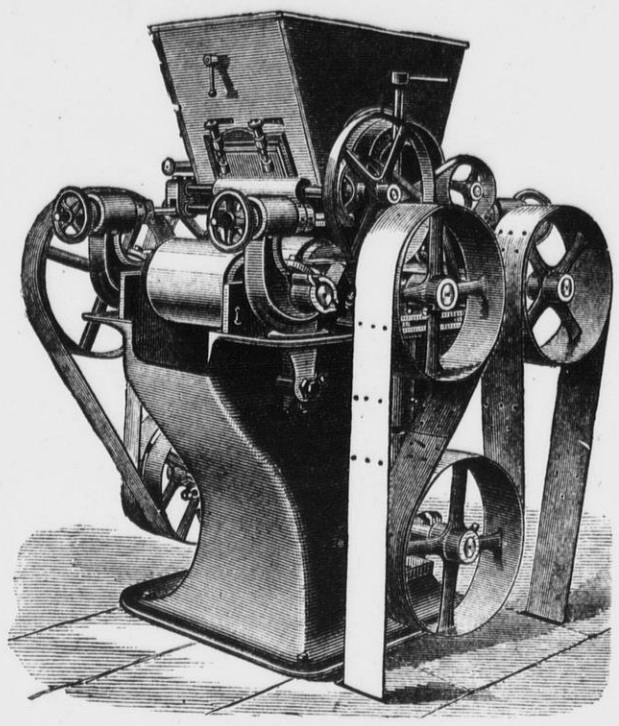

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SOLE MANUFACTURERS OF

GRAY'S PATENT

Noiseless Belt Roller Mills

WITH

Wegmann's Patent Porcelain Rolls.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superseding the use of Mill Stones for this purpose.

Read the Following Letters.

Terre Haute, Ind., Aug. 22nd, 1882.

MESSRS. E. P. ALLIS & Co., Milwaukee, Wis.

Gentlemen :—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double sets sent us soon after starting up our mill last fall, we put in place of two run of stones for grinding our coarse Middlings.

We find the Flour from the Porcelain Rolls much more evenly granulated and much sharper and cleaner than that we got from the stones, besides the second or fine Middlings are much better, being almost entirely free from germs and not as specky.

Yours Truly,

KIDDER BROS.

Kings County Flour Mills, Brooklyn, N. Y., Aug. 15, 1882.

MESSRS. E. P. ALLIS & Co.

Gentlemen:—You ask how I like the Porcelain Rolls as compared with Mill Stones. I have been using the original Porcelain Gear Machines for five years and became convinced a long time ago that Mill Stones could not produce as satisfactory results.

I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong, and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing middlings and soft branny residuums and tailings is unequaled by any Machine, iron or stone, at least this is my opinion after five years of practical experience.

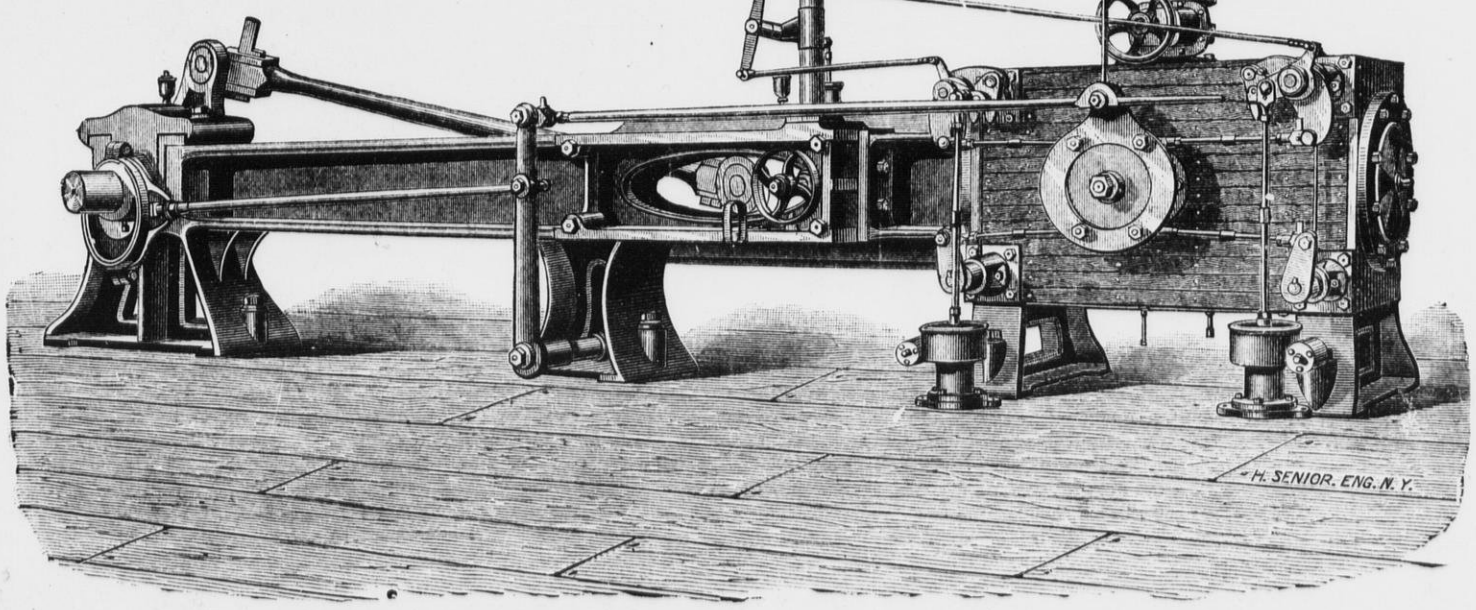
Yours truly, JOHN HARVEY,

Head Miller Kings Co. Mills, Brooklyn, N. Y

ALSO SOLE MANUFACTURERS OF THE CELEBRATED

REYNOLDS' CORLISS ENGINE.

Over 300 of these Engines in use.



These Engines are especially adapted for use in Flouring Mills—being unsurpassed in Simplicity, Durability and ECONOMY OF FUEL, and far ahead of any other

Automatic Cut-off Engines.

☞Send for catalogues of Roller Mills, Flour Mill Machinery, Saw Mill Machinery, Reynolds' Corliss Engines, etc., etc. Address :

Edw. P. Allis & Co.,

MILWAUKEE, WIS.

The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

J. B. A. Kern	Milwaukee, Wis.
LaGrange Mill Co	Red Wing, Minn.
New Era Mills	Milwaukee, Wis.
Daisy Flour Mills	Milwaukee, Wis.
Winona Mill Co	Winona, Minn.
W. D. Washburn & Co	Anoka, Minn.
Archibald, Schurmeier & Smith	St. Paul, Minn.
White, Listman & Co	La Crosse, Wis.
Milwaukee Milling Co	Milwaukee, Wis.
Stuart & Douglas	Chicago, Ill.
Stillwater Milling Co	Stillwater, Minn.
Otto Troost	Winona, Minn.
E. T. Archibald & Co	Dundas, Minn.
C. McCreary & Co	Sacramento, Cal.
Gardner & Mairs	Hasting, Minn.
J. Schuette & Bro	Manitowoc, Wis.
Minnetonka Mill Co	Minnetonka, Minn.
J. D. Green & Co	Faribault, Minn.
F. Goodnow & Co	Salina, Kansas
A. L. Hill	Faribault, Minn.
Beynon & Maes	Owatonna, Minn.
Eagle Mill Co	New Ulm, Minn.
Albert Wehausen	Two Rivers, Wis.
Green & Gold	Faribault, Minn.
Meriden Mill Co	Meriden, Minn.
Townshend & Proctor	Stillwater, Minn.
Sooy & Brinkman	Great Bend, Kansas.
Frank Clark	Hamilton, Mo.
N. J. Sisson	Mankato, Minn.
Jas. Campbell	Mannannah, Minn.
C. J. Coggin	Wauconda, Ill.
J. J. Wilson	Algona, Iowa.
Ames & Hurlbut	Hutchinson, Minn.
Lincoln Bros	Olivia, Minn.
Northey Bros	Columbus Junction, Iowa.
Bryant Mill Co	Bryant, Iowa.
David Kepford	Grundy Centre, Iowa.
Waterbury & Wagner	Janesville, Minn.
W. A. Weatherhead	South Lyons, Mich.
Geo. Bierline	Waconia, Minn.
James McCafferty	Burton, Mo.
Geo. P. Kehr	Menomonee Falls, Wis.
Winona Mill Co. compounding their present 24x60 Winona M.	
Forest Mill Co	Forest, Minn.
L. H. Lanier & Son	Nashville, Tenn.
Wells & Nieman	Schuyler, Neb.
Grundy Centre Milling Co	Grundy Centre, Iowa.
B. D. Sprague	Rushford, Minn.
The Eisenmeyer Co	Little Rock, Ark.
A. W. Ogilvie & Co	Montreal, Canada.
Geo. Urban & Son	Buffalo, N. Y.
A. A. Taylor	Toledo, O.
Pindell Bros. Co	Hannibal, Mo.
Kehlor Milling Co	East St. Louis, Ill.
Walsh, DeRoo & Co	Holland, Mich.
Goodlander Mill and Elevator Co	Fort Scott, Kan.
W. Seyk & Co	Kewaunee, Wis.
Topeka Mill and Elevator Co	Topeka, Kan.
Strong Bros	Graceville, Minn.
C. A. Roberts	Fargo, D. T.
Coman & Morrison	Fox Lake, Wis.
J. G. Schaapp	Grand Island, Mich.
Fred. Schumacher	Akron, Ohio.
Warren Mf'g Co	Warren, Minn.

See Page 26.

The United States MILLER

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ONE OF THE KIND OF MILLS WE BUILD.

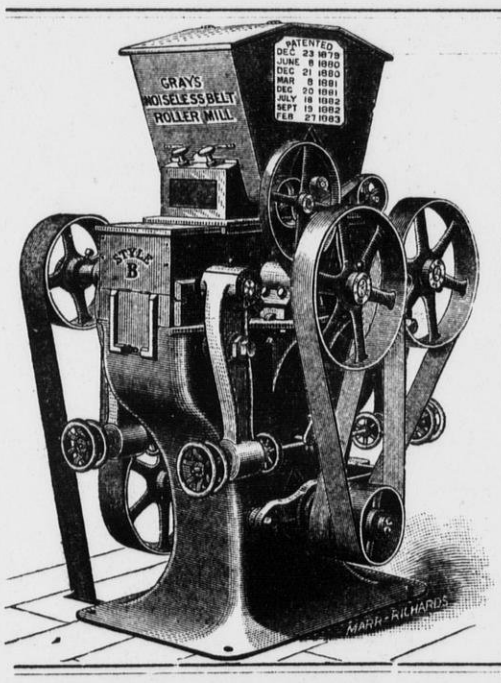
THE JOHN T. NOYE MFG. CO., BUFFALO, N. Y.

Laury's, Pa., September 1, 1884.

GENTLEMEN:---Since putting in the rolls made by you, and changing the bolting arrangements as advised, I have been running night and day, turning out over two hundred barrels of flour per twenty-four hours, with a yield surprisingly under $4\frac{30}{60}$. I doubt if our flour can be beaten in this country. This statement is pretty strong, but can be backed up. I can clean the middlings so that there is not a particle of flour left. Millers coming here to see our offal, do not believe but I have some secret way of manipulating the material. It is all square milling on superior rolls and with a superior system. I could not fill my orders if I had double the capacity.

Yours truly,

J. R. SCHALL.



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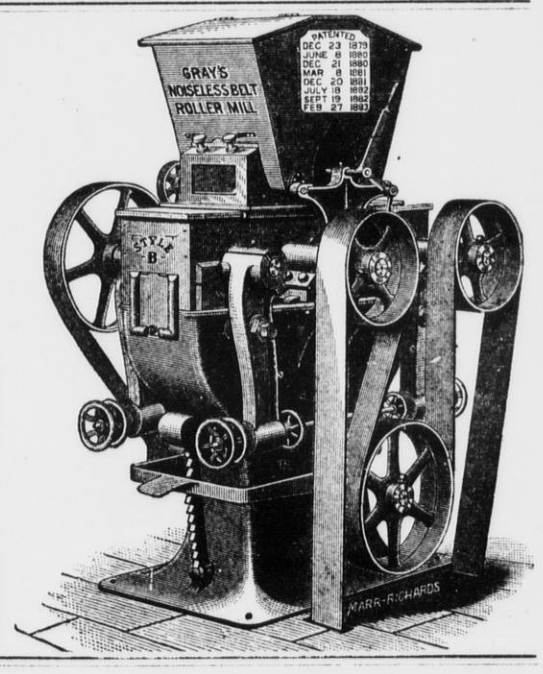

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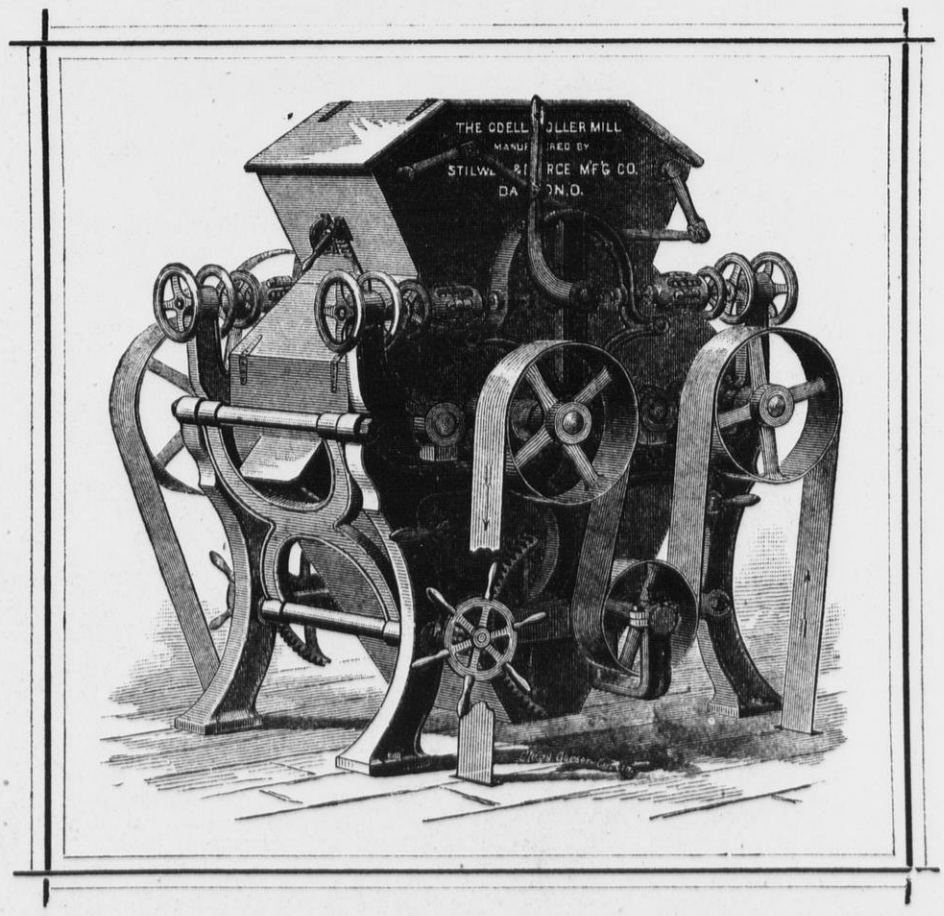
Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with Unparalleled Success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References 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 arranging mills. Can furnish machines on Short Notice. For further information, apply in person or by letter to the sole manufacturers,

STILWELL & BIERCE MANUFACTURING CO.,

Agents for Du Four's Bolting Cloth.

[Please mention this paper when you write to us.]

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TO SETTLE A DISPUTED QUESTION!

Owing to the fact that we are the only manufacturers of Roller Mills in this country who are authorized to build and sell machines containing Porcelain Rolls under the Wegmann patents, our business competitors have from motives of policy, been forced to oppose the introduction and use of the justly

CELEBRATED

Wegmann Porcelain Roller

MILLS!

of which we are the exclusive licensees and sole manufacturers in America. As many millers have not yet given the Porcelain Rolls a practical trial, but have formed their opinions of their merits wholly from hearsay evidence, we desire to give millers generally an ample opportunity to determine for themselves, from a thorough trial in their own mills, the merits or demerits of Porcelain Rolls, and, therefore, make the following

OFFER!

We will sell any miller who is now grinding purified middlings on millstones, smooth iron rolls or scratched rolls, one of our

Gray's Noiseless Belt Drive Porcelain Roller Mills,

of suitable capacity, at our regular prices, and if the result of an impartial and careful trial does not establish the fact that the Porcelain Rolls are superior to either millstones, smooth iron or scratch rolls, for the purpose for which we recommend them, we will replace the Porcelain Rolls with either smooth or scratched iron rolls, allowing the difference in price; or the entire machine may be returned to us at our expense. Where millers desire, we will send a competent miller to instruct them in the proper handling of the Porcelain Rolls without expense to them. Our offer is made with the purpose of placing it in the power of every miller to satisfy himself that he is using the best machine for flouring purified middlings. Millers desiring to avail themselves of this offer should send sample of stock they wish to reduce, stating capacity required, to

EDW. P. ALLIS & CO.,

Reliance Works, Milwaukee, Wis.

[Please mention the UNITED STATES MILLER when you write to us.]

The United States MILLER

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MESSRS. BLAIR & AULD'S MILL, ATCHISON, KS.

On this page we have the pleasure of showing an illustration of the new full roller mill owned by Messrs. Blair & Auld, and built by THE NORDYKE & MARMON CO., of Indianapolis, Ind. The mill is highly creditable to the firm who built it.

The building is put up with good design, and is ornamental in its finish. It is composed of heavy brick walls, trimmed with stone, and stands next to the Atchison Union Depot. The offices, packing room and elevator adjoin the main building having been erected especially for the purpose. The engine room is separate from the mill, and contains a handsome 100-horse power automatic engine, which, it is said will use only three pounds of coal per horse-power per hour.

The grinding floor contains thirteen double Nordyke & Marmon roller mills, arranged in two lines, and driven by two line shafts. Five flour packers are located along the wall. The mill makes seven breaks on wheat, and the bran from the tail of the seventh break scalper is sent to a bran duster, and the flour thus obtained is dressed on a centrifugal. The upper floors contain ten scalping reels, fourteen flouring reels, seven middlings purifiers, provided with improved dust collectors, also four large centrifugals, and two bran dusters. The capacity of the mill ranges from 200 to 250 barrels per day. The total cost, including building, will be about $40,000.

BLAIR & AULD'S MILL, ATCHISON, KS.

How long the depression in business is to continue we will not attempt to define, but we think that want of confidence is its prevailing cause at present. Fears of the future have no small share in producing the very effect created by th m, and although they do not cause depression, unreasonably prevent recovery. For a year and a half values have been gradually settling, and the buying public has been stinting its purchases and hoarding its resources, while many producers have curtailed production, so that while for most lines there is evident pressing want, there is such a lack of money that transactions can not be made, and the fearfulness of the public in the matter of credits magnifies that want a hundred fold.—*Grain.*

POSTAL FIGURES.

The annual report of A. D. Hazen, third assistant postmaster general, shows that the total number of postage stamps, stamped envelopes and postal cards issued during the year was 2,166,130,396. Total value $41,515,877. The decrease in value of issues of ordinary postage stamps was $1,229,735; total decrease in value of all issued, including postal cards, stamped envelopes, postage-due stamps, and wrappers, $1,394,441.

The weight of second-class matter during the year, not including the free circulation within the county of publication, was 94,479,607 pounds, the postage on which was $1,889,592; an increase of $184,414 over the previous year. The whole number of pieces of undelivered mail matter received in the dead-letter office, including 278,648 pieces on hand, was 4,843,099; of this number, 314,719 were misdirected. There were destroyed 2,539,477 letters and 17.513 parcels of fruit, cake, etc. Among the letters opened 13,062 contained money, and 19,014 drafts, etc. Of letters sent to foreign countries, 210,436 were returned as undelivered. The total number of letters and parcels registered during the year, was 11,246,545, and the amount of registry fees collected, $957,059; an increase of $30,509. The loss on registered letters during the year amounted to one out of every 21,795 pieces of mail. This is the smallest average of losses since the organization of the registry system.

GRAIN AND GRANARIES.—The plethora of grain in the markets of the world has recently brought about two novel agitations, one in France and one in Russia. The new Minister of Commerce in France is an advanced free trader, while the Minister of Agriculture is a very strong protectionist. Business in France, as everywhere else in the world, is very bad, and the ignorant peasantry and artisans are trying to get the government to impose an import tax on grain and produce. The government, under the guidance of M. Meline, the protectionist Minister of Agriculture, has already introduced a bill increasing the duties on oxen from fifteen francs to twenty-five francs; on sheep from two francs to three francs, and on pigs from three francs to six francs; but the farmers are by no means satisfied, and want much higher duties on imported cattle and a tax of 2f. 50c. per cwt. on wheat and 4f. 50c. per cwt. on flour. The same influences are at work in Russia, although in a different way. The supply of grain is so large there and the demand so limited that the farmers cannot dispose of it at anything like cost price, and the party of the Moscow *Gazette* goes so far as to recommend that the government should advance money to the municipalities, allowing them to establish large granaries, where the peasants might store their grain and receive a loan upon it until such a time as an advance in price would enable them to sell at a profit. One moment's reflection ought to satisfy the most unreasoning mind that such a proceeding would only tend to raise prices artificially, and thus check exportation. But it is nothing surprising that such a thing should not be properly understood in Moscow, when all the Chicago grain cornerers and bank directors do not seem to get it through their heads. Abroad large accumulations of wheat in England, coupled with the heavy receipts here, have had a very depressing effect on prices. Late advices from Madras, Bengal and Mysore, in India, report favorable weather. The Argentine Republic promises 6,000,000 bushels of wheat for export. On the Continent of Europe the weather has favored the planting of winter wheat, and breadstuffs have been dull and prices as low as in previous weeks. A London circular states that "flour continues to be offered at very low prices, both for home made and foreign, and is now cheaper in proportion than wheat; yet no one seems to have confidence in speculative operations, seeing how the United States can pour out the manufactured article with such a large visible supply of wheat in hand there."

A RECENT article in *Invention*, a London paper, discusses safety arrangements for factories. It says: "We have personally visited many factories, large and small, and can ourselves testify to the fact that even now a large amount of very dangerous machinery is either quite unprotected or fenced in a very imperfect manner. In one instance—and that, too, in the heart of London—we saw the end of a small shaft revolving at a high speed allowed to project some inches through a partition only three feet from the ground, and in a very narrow passage continually traversed by the work people. 'Orders' had been given, we were told on pointing out the great and constant peril, to have the machinery stopped and the projecting end of the shaft cut off; but we believe the 'orders' were of very ancient standing. We truly trust that they have been now carried into execution."

A SPECIFIC FOR HICCOUGH.—Dr. Henry Tucker recommends, in the *Southern Medical Record*, the use of the following very simple remedy in the treatment of hiccough, namely: Moisten granulated sugar with good vinegar. Of this give to an infant from a few grains to a teaspoonful. The effect, he says, is almost instantaneous, and the dose seldom needs to be repeated. He has used it for all ages—from infants of a few months old to those on the down-hill side of life, and has never known it to fail. The remedy is certainly a very simple one, and although no theory is advanced to account for its wonderful action, it merits trial.—*Therapeutic Gazette.*

RAIDING THE BAKERS.—The police in parts of England are just now making raids upon bakers and taking legal proceedings in cases where bread has been sold deficient in weight. There is a wide-spread feeling that, owing to the low price of wheat, the profits of bakers are unusually high. It was urged in behalf of fifteen bakers who had been convicted and fined at Bath, either for selling bread short in weight or delivering bread from a cart without proper scales and weights, that the loss of the purchaser was not over one-sixteenth of a penny where the pound of bread was short by an ounce. But it was justly contended that while this loss to a purchaser was trivial, it was important to the baker, inasmuch as it represented the gain of a penny upon every four pound loaves that were sold.—*New York Commercial Advertiser.*

THE Supreme Court of Georgia has decided that dealing in "futures" is illegal, and such contracts are void. Justice Blandford delivered the decision, and indulged in the following remarkable language: "Faro, brag and poker are tame, gentle, submissive animals compared to this monster, future speculation, which is a ferocious beast allowed to stalk about in open mid-day, with gilded signs aud flaming advertisements, to allure unhappy victims to its embrace of death and destruction." It really looks as if the Judge had been a victim; but all the same there is plenty of truth in what he says to show that it should be suppressed, the same as "brag, poker, and faro."

BELT CONTACT. The weight of authority is so strongly in favor of running leather belts with the grain side to the pulley that the question ought to be regarded as settled beyond the need of further discussion. The relative value of a belt with grain side as compared with flesh side contact has been determined by experiment with substantial accuracy. It is a fraction more than one-third greater, or say 34 per cent., with the former than with the latter application. The main reason ordinarily assigned is the advantage derived from the smoother surface, closer contact and better adhesion. But there is another ground for giving the grain side the preference which is of equal practical importance. The reason for placing a belt with the smooth side on the pulley is that the flesh side is the strongest against rupture, having more than twice the strength of the smooth side, and the belt is thus less subject to wear and less liable to crack on the smooth side. It is better to crimp the grain side than to stretch it, as is the case when it is used outside. If a pulley is covered with leather, grain side out, so that two leather surfaces come in contact, grain against grain, there will be more adhesion, which will be more increaseed by using castor oil as a dressing.—*Exchange.*

THE total amount of our exports of breadstuffs to France for the last fiscal year, the official returns of which have been published (1883) were as follows: Corn, 1,717,903 bushels—value, $1,077,000; Indian cornmeal, barrels, 127—value, $495; wheat, bushels, 15,096,712—value, $17,178,486; wheat flour, barrels, 63,223—value, $355,672. This is a comparatively small percentage of the total exports of our exports to all countries, which in some years were of the value of $208,040,850.

UNITED STATES MILLER.

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ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 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.*

MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

ACADEMY OF MUSIC.—Performances every evening. Wednesday, Saturday and Sunday matinees.

SLENSBY'S VARIETY THEATER—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

COMMISSIONER of Patents Benjamin Butterworth, submits the following annual report: Number of applications for patents received, 35,204; applications for design of patents received, 1,322; applications for reissue of patents received, 244; applications for the registration of trade marks, 1,077; applications for registration of labels, 975; total 38,822. Caveats filed, 2,672; patents granted, including reissues and designs, 22,822; trade marks, registered, 903; labels registered, 833; total, 24,558. Patents withheld for nonpayment of final fees, 24,613; patents expired, 10,230; receipts from all sources, $1,145,433, an increase of $49,548 over the preceding year; expenditures (excluding printing) $901,-413; surplus, $244,019. The increase over the number of applications for patents, design, etc., received during the preceding year was 3,088. The number of applications awaiting action by the office June 30, 1884, was 9,186, an increase of 5,087 over the accumulated applications at the end of the preceding year.

A copy of Ropp's Calculator and the UNITED STATES MILLER will be sent to any address for one year for $1.00.

ITEMS FROM OUR EXCHANGES.

Unless the tendency of milling is very deceptive, it is only a question of time when the "small fish" will be swallowed by the larger ones. The difficulty now experienced by small millers in making both ends meet, may, possible, be attributed to close times; yet it can not be denied that the tendency of milling is decidedly toward large mills and the centralization and combination of milling capital. The outlook for small millers is not at all promising.—*St. Louis Miller.*

THE recent and general agitation in England regarding the high price of bread is beginning to have effect. Already in many country districts the price has been reduced, while in others the loaves have been enlarged. That this change will work its way into London is highly probable. The investigations made by the press of the baking business have led to fresh developments which shock consumers and are likely to result in official action. Many of the bakeries are found to be in old, musty and unventilated buildings, reeking with filth and so conducted as to make it certain that the product is unfit for human consumption. Such an investigation here would disclose a similar shameful condition in the bakeries of many American cities. We have no laws by which these things can be regulated, but legislators should see too it at once that the food of the purchasing public is made in clean establishments, by clean-handed employes, in clean ovens and other utensils Such legislation is not class legislation. It affects the health of too many people to be so classed. The man who sells mouldy, sour, or dirty bread is as much amenable to the law as the man who sells strychnine for quinine, and should be held equally responsible.—*Northwestern Miller.*

ALLEGED OVERPRODUCTION.

The persistence with which those who write and talk of economic subjects cling to the idea that we are at present suffering from "overproduction" is at least surprising. No elementary truth in political economy is better established, it seems to us, than that the end and aim of human effort is abundance. That the point of abundance has not been reached must be evident to every one who studies social conditions even superficially. We have in warehouse and store a considerable accumulation of useful products which the owners cannot presently sell to advantage. So much may be admitted. But if the bare necessities of the community were met, not only would our surplus disappear, but the utmost possible production could not overtake the demand for so long a time to come as statistics could take into a consideration. Considerably more than one-half the 54,000,000 of people in this country are insuffiently supplied with the very things we speak of as overproduced. Half of this half are suffering sharp privation, and a smaller fraction of the total are living in object poverty, without as much of anything as actual necessity demands. If so, why are barns, elevators, warehouses, shops and cellars crowded with food, clothing, utensils and the countless useful products of industry? Obviously because those who need these things have nothing to give in exchange for them. And why have they nothing to exchange? Because their only means of purchase is through the exchange of their labor for such commodities as they need or desire.

Now, let us see where this simple and easily-followed line of reasoning leads us. If labor were more in demand and of higher market value, it would be exchanged for what is now seeking a market. But this labor would need to be usefully employed in swelling production, so that, through the convenient medium of money, the healthful and natural exchanges of services can be maintained. If all the available labor of the country were usefully employed production would be enormously greater than it is now, but so would consumption, and it is doubtful if there would be enough of anything for which a large and general demand exists. In thus appears that through increased production the state of congestion which we now call "overproduction" would disappear, which sufficiently proves, we think, that when we say overproduction we mean something very different, and are confused and misled by the unscientific use of a term which has a very different significance from that which we usually give it. The fact that the solution of the problem will be found in an increased production resulting from the better employment of labor throws a great deal light upon a subject which needlessly puzzles a great many wise and thoughtful men. There can be no sustained improvement in general business until labor is better employed at better wages. Labor at 90 cents a day, or idle, does not conduce to a large consumption. Every man discharged to reduce production only aggravates the evil for which a remedy is sought. If, on the other hand, we could set in motion every mill wheel and quicken into life all the agencis of production, the evil from which we are now suffering would promtly cure itself.—*Iron Age.*

PROTECTIVE DUTIES IN FRANCE.

The cable brings the news that a very strong demand has come up to Paris from all over France for an increase in the protective duties on agricultural products, the demand being that the protection to agriculture shall be commensurate with that given to manufactures, The indications are that the French cabinet will accede to these requests and materially increase the duties upon these products. It is reported that a duty of 2f. per cwt. will be levied on wheat and 2f. per cwt. on flour.

This of course, is done in the interest of French agriculture and will no doubt have the tendency to improve the condition of the industry all through France in the same way that the heavy duty with a bounty for export has so materially increased the sugar industry in France, and probably will have the same effect that this duty on sugar has had. France is now exporting sugar to the neighboring nations, and as the result of this protection has been enabled to send sugar to England and sell it at such a low rate as to close a large number of the sugar refineries of Great Britain.

Thus the theory of protection in the practical affairs of every day life receives constantly increasing adherence. After Cobden had succeeded in impressing his idea upon English legislation he was sent to France to convert Louis Napoleon to the same economic theories, and succeeded, but his success was the beginning of the downfall of the emperor. Now that country has virtually abandoned its belief in Cobden's soundness as a political economist. The chief point of his attack was the corn laws, and if the French Government re-enacts the corn law as the Minister of Agriculture proposes to do, the cutting loose from the Manchester school of politics will be complete. Cobden dreamed of universal free trade. He congratulated himself that he had started forces in operation that would eventually produce it, but the nations of the world have abandoned it. They see the result of protection in the example of the United States, they see the result of free trade in the example of England, and they are not hesitating to follow the example of the young Republic in the West.—*American Manufacturer.*

INDIAN-MEAL DELICACIES.

Indian Pudding.—Have one quart of milk in a stew pan over the fire, just ready to boil; stir into this four tablespoonfuls of fine cornmeal which has been moistened in cold milk enough to render it of a lumpless, creamy, consistency; after it is thoroughly mixed in the hot milk, add three tablespoonfuls of molasses; add a teaspoonful of salt after it has boiled rapidly ten or fifteen minutes, and you are ready to pour it into a well-buttered pudding dish. It will bake so as to be as good as the average in two hours, but remember those brick oven puddings that sat in the oven all night and were the better for it, and after it has baked thoroughly set in the "hot closet" of your range and give it all the time you can afford, the more the better. Six hours is three times as well as two. Add butter now and then to keep the top from burning.

Two-Thirds Corn Cake.—Sift together twice (so as to get it well mixed) two cups of Indian meal and one cup of flour, one heaping teaspoonful of saleratus, one of salt. Beat one egg lightly, mix with one-half cup of molasses and three cups of new or skimmed milk; into this stir the meal and flour as above prepared, and pour into hot gem-pans, or into common pans, and cook in sheets and cut in squares.

Indian Bread.—Two cups of Indian meal, one half cup each of rye meal and wheat flour, two-thirds of a cup of molasses, one pint of sour or buttermilk, one teaspoonful of saleratus or cooking soda, one-teaspoonful of salt.

Brown-Bread.—Into one teacupful of sour milk stir and dissolve saleratus until it foams; add a teaspoonful of salt, two cups of rye and one of Indian meal; thin with warm water if necessary, as it should be as thick as it can be and yet pour out.

Lily's Corn Cakes.—Two cups of sweet milk, one cup of sour milk, two cups of meal, one cup of flour, teaspoonful of saleratus, butter the size of an egg, tablespoonful of sugar, teaspoonful of salt, and add one egg well beaten. These are excellent baked in roll tins or gempans, and for the poetical we give an easy way to remember the rule:

Two of sweet and one of sour;
Two of meal and one of flour;
One teaspoonful soda to make it rise;
Egg and butter of a size;
Sugar and salt complete the rule—
Who can't make it is a—fool.

Fritters.—One cup of new milk, two eggs, one-half teaspoonful saleratus, salt; make stiff enough with equal parts Indian meal and wheat flour to pat with the hands into flat, round cakes. This is easily done by wetting the hands in cold water, and with deft handling the cakes will have an average look. Drop in a skillet of hot fat. (To be eaten like a biscuit, with butter.)

Pancakes.—One cup of milk, either sour or sweet; two eggs, well beaten; one-half cup of molasses, teaspoonful saleratus, a little salt. Make a stiff batter of half rye and half Indian. Drop the batter from spoon into hot fat. This latter is quite an art; the forefinger of the right hand should be dipped in cold water, the spoon of batter held in the left hand, and the aforesaid wet forefinger with a deft twirl should take the batter out so that it will fall into a perfect ball, or it will "peter out" in thin edges and points. But none but the experts can do this perfectly. The novice can only rely on the promise that "practice makes perfect," and regret that "Whipple's snagging machine for trimming edges off pancakes" is still an unperfected dream.

Suet Pudding.—One pint of Indian meal, two cups sweet milk, one cup of chopped suet, a little salt, one-half cup of molasses, one-half teaspoonful of saleratus, chopped seedless raisins or currants and citron.

THE first patent granted to an inventor in the United States is mentioned in a speech of ex-Senator Wadleigh, of New Hampshire, in the Forty-fifth Congress. The Senator said: "An intelligent gentleman of my own State has referred me to an act of the general court of the colony of Massachusetts Bay, passed in 1646, granting to one of his ancestors, Joseph Jenks, the exclusive right of making and selling his improved scythe for the term of fourteen years. That, I think, was the first patent granted to an inventor in America. The improvement referred to changed the short, thick, straight English scythe into the longer, thinner, curved implement, with stiffened back, now in use."

MILLING PATENTS.

The following list of milling patents granted during the past two months is specially reported by Franklin H. Hough, solicitor of American and foreign patents, 617 Seventh street, N. W., Washington, D. C.:

Issue of September 30, 1884: No. 305,976—Grain transfer and storage system, L. Smith, Kansas City, Mo. No. 305,751—Grinding mill, J. Hollingsworth, New York, N. Y. No. 306,000- Measure and register, automatic grain, J. L. and E. D. Claudin, Morton, Ill.

Issue of October 7th: No. 306,289—Flour bolt, I. Shereman, Reading, Pa. No. 306,160—Grain cleaner and separator, J. H. Knickerbocker, La Fayette, Ind. No. 306,365—Roller mills, automating feeding device for, M. B. Titlow, Allentown, Pa.

Issue of October 14th: No. 306,401—Feed mill, L. and E. Lanke, Fredonia, Wis. No. 306,600—Flour bolt and middlings purifier, J. J. and E. T. Falkner, McMinnville, Tenn. No. 306,612—Grain separator, J. F. Hatfield, Cambridge City, Ind. No. 306,567—Middlings purifier, R. and R. Wilcox, Utica, Wis. No. 306,573—Millstone dress, G. Bernard, Mont Pont, France. No. 306,673—Boller mill feed mechanism, J. Busch, assignor to himself and J. Stevenson, Marine, Ill.

Issue of October 21st: No. 306,945—Grinding mill, roller, U. H. Odell, Dayton, O.

Issue of October 28th: No. 307,091—Bolting cloth, etc., applying binding to edges of, S. O. Brigham, New York, N. Y. No. 307,275—Flour and grain conveyor, E. S. Edmondson, Oshawa, Ont., assignor of one-half to Goldie & McCulloch, Galt, Can. No. 307,386—Grain apparatus for gradual reduction of, P. Gillen, London, Eng. No. 307,140—Grain elevator, dump and register, automatic, C. C. Radley, Brimfield, Ill.

Issue of November 4th: No. 307,654—Grain separator and grader, W. W. Ingraham, Chicago, Ill.

Issue of November 11th: No. 307,828—Grain cleaner, B. Wright, Hudson, Mich.

Issue of November 18th: No. 308,291—Grain drier, A. S. Tompkins, F. M. Courage and F. A. Cracknall, London, Eng. No. 308,095—Grain-transferring apparatus, E. S. Richards, Chicago, Ill. No. 308,254—Grinding mill roller, C. T. Hanna, Allegheny, Pa. No. 308,208—Mill burr, L. P. and C. Teed, Erie, Pa. No. 308,131—Roller mill, A. O. Byns, Appleton, Wis.

OUR EXPORT FLOUR TRADE.

The almost unprecedented activity of the larger wheat-flour mills throughout the country during the past two or three months, during a period of great depression among almost all manufacturing industries, is sufficient to attract attention. An examination into the development of our export trade in wheat flour reveals details respecting America's first place as a flour maker, which point to the following conclusions:

First—That the consumption of bread in this country at least, has not declined, notwithstanding the relatively high price (as compared with the cost of flour) demanded by bakers.

Second—That more American-made flour is going abroad than ever, and at a time, too, when shipments of cotton have been popularly regarded as the only increasing export of a domestic staple.

Third—That British millers are unable yet to compete successfully with flour from the United States, notwithstanding their wide range of wheats from which to select a combination for grinding, of which we on this side have heard so much of late; and

Fourth—That the increasing annual shipments from the United States of wheat as flour bids fair, at the present rate of increase, to reverse the proportions (in value) now held by our wheat and flour shipments abroad.

The domestic flour market has long been quoted comparatively quiet, with a fair inquiry for export, mostly for low grades, of which the receipts at seaboard have not been in excess of the export inquiry. Better grades at seaboard have been in larger receipt and lighter demand, and prices have not been so well maintained. On all grades, however, quotations have been low and in the main declining. The following indicates the shrinkage:

	July 1.		1884.		
	1882.	1883.	July 1.	Sept. 17.	Nov. 7
No. 2	$2.60	$2.60	$2.25	$2.00	$2.30
Winter, patent	7.00	6.50	5.50	4.75	4.85
Spring, patent	8.75	7.25	6.00	4.60	4.50

It also points to the ability of our miller to make good flour at a low cost and to sell it cheap, in part due to the outcome of the improved processes of milling introduced here of late years. It is to these, undoubtedly, that the English miller must look for the element of competition which he has thus far failed to overcome. It must not be overlooked, of course, that reduced transportation charges in the United States have facilitated shipments of flour from the interior. Comparatively few aside from those interested and those engaged in allied trades and industries have realized the proportions to which the export of American flour has grown. To the end that this subject may be brought out clearly, special analyses of reports from the United States (National Bureau of Statistics) and of agricultural returns to the British Parliament have been made.

In the past thirteen years (ending June 30) the production of wheat in the United States has nearly doubled, the proportion of the crop sent abroad (as wheat) has increased two and three-quarter times, and the share exported as flour has increased three and two-third times. The figures in detail, as per the government reports, are:

Government report year ending June 30.	Total crop U. S., bush.	Wheat exp'd, bushels	Flour exp'd, barrels.
1871-72	230,722,000	26,423,000	2,514,000
1872-73	249,997,000	39,204,000	2,562,000
1873-74	281,254,000	71,039,000	4,094,000
1874-75	309,102,000	53,047,000	3,973,000
1875-76	293,136,000	55,073,000	3,935,000
1876-77	89,356,000	40,325,000	3,343,000
1877-78	364,194,000	72,404,000	3,947,000
1878-79	420,122,000	122,355,000	5,039,000
1879-80	448,755,000	153,252,000	6,011,000
1880-81	498,549,000	150,565,000	7,945,000
1881-82	380,280,000	95,271,000	5,915,000
1882-83	504,185,000	106,385,000	9,205,000
1883-84	420,154,000	70,349,000	9,152,000

Percentages of Growth. Years ending June 30.	Crop inc. or dec per cent. yearly.	P. c. crop exp'd as wheat and flour	P. c. crop exp'd as wheat.	P. c. crop exp'd as flour
1870-71	....	17.1	11.4	5.7
1872-73	Inc. 8.1	20.8	15.7	5.1
1873-74	Inc. 12.3	32.6	25.2	7.4
1874-75	Inc. 9.9	23.6	17.1	6.5
1875-76	Dec. 5.1	25.9	18.7	7.2
1876-77	Dec. 1.3	19.8	13.9	5.9
1877-78	Inc. 25.9	25.5	19.4	6.1
1878-79	Inc. 14.8	35.4	29.1	6.3
1879-80	Inc. 6.6	40.2	34.2	6.0
1880-81	Inc. 11.1	37.3	30.2	7.1
1881-82	Dec. 23.6	32.1	25.0	7.1
1882-83	Inc. 32.6	29.4	21.0	8.4
1883-84	Dec. 16.6	26.5	16.7	9.8

In the past season the increase of crop yield was 19 per cent.

The percentages which we have calculated show that the average annual proportion of the domestic wheat crop exported (both wheat and flour) between 1872 and 1874, years ending June 30 (three years), was 23.5 per cent., against an annual average of 23.7 per cent. exported in the four years ended June 30, 1878, and as compared with 33.5 per cent. exported in the six years ended June 30 last. The proportion which went abroad as wheat only in the periods named were respectively 17.4 per cent., 17.5 per cent. and 26.03 per cent. The shipments of flour annually averaged, during the three years first named, 6.03 per cent. of the entire crop of wheat; during the second period (of four years) 6.42 per cent., and during the past six years 7.45 per cent. In the year ended June 30 last we sent abroad 26¼ per cent. of the wheat raised, of which nearly two-fifths had been reduced to flour. In other words, one-sixth of the entire wheat crop was sent abroad as wheat, and nearly one-tenth in the form of flour. Thirteen years before a little over 10 per cent. of the wheat grown (1871-72) was shipped abroad in the form of wheat, and less than 6 per cent. as flour. The proportion of the crop exported as wheat has therefore inceased one-half in thirteen years, while that which has gone abroad as flour has nearly doubled. The shipments of flour from this country have increased in value more rapidly than those of any other single leading product shipped. This is shown by the fact that it has risen from sixth place in 1873-74 (ending June 30) to fifth place (in value) in 1882, and to third place in 1882-83. The approximate values of the eight leading exports from the United States in those years were:

EXPORTED FROM THE UNITED STATES.

	Years ending June 30—		
	1882-83.	1881-82.	1874.
Cotton	$247,000,000	$199,000,000	$211,000,000
Wheat	119,000,000	112,000,000	96,000,000
Flour	54,000,000	36,000,000	25,000,000
Refined oil	40,000,000	47,000,000	39,000,000
Bacon and hams	38,000,000	46,000,000	33,000,000
Indian corn	27,000,000	28,000,000	24,000,000
Lard	26,000,000	28,000,000	19,000,000
Tobacco	22,000,000	21,000,000	32,000,000

The direction in which our exports of wheat flour go now becomes of special interest. Beyond the fact that the demand from the United Kingdom and Ireland is the largest and that Central and South America are also large takers popular information is meager. The following percentage of our total exports to the countries named (approximate) have been specially prepared:

	Year ending June 30—		
	1882-83.	1878-79.	1871-72.
Exports of	Barrels.	Barrels.	Barrels.
Flour from United States,	9,205,664	5,629,714	2,514,535
Distributed to	Per cent.	Per cent.	Per cent.
United Kingdom	62.0	47.0	13.0
Brazil	8.0	12.5	15.0
British W. Ind. and British S. Am.	5.6	9.8	14.9
British N. Am. (excl. Can.)	3.5	6.3	7.7
Canada	2.8	2.5	13.3
Cuba	2.6	2.2	6.5
Hayti and San Domingo	1.4	2.5	2.9
Belgium	1.3	0.8	0.16
Porto Rico	0.8	0.85	2.7
France	0.7	0.5	Nom.
Germany	0.3	0.2	0.12
Other countries	11.0	14.9	23.00

While the takings of flour by the West Indies and of Central and South America are thus seen to be considerable, those by the United Kingdom, aggregating over 64 per cent. in the year ending August 31, 1884, nearly two-thirds of the whole, are of sufficient prominence to call for a special review of its production and receipts of wheat (both as wheat and flour). The figures as returned to Parliament for the periods noted were:

	000's OMITTED.					
	Total crop, U. K. quarters.	BRITISH. Imps. Wheat	BRITISH. Cwts. Flour.	Per cent. inc. or dec. of crop.	Per cent. inc. or dec. wheat imps	Per cent. inc. or dec. flour imps.
1871-72	10,056	39,407	4,396	.....	.....	.....
1872-73	10,558	45,989	6,551	.....	Inc. 16.0	Inc. 51.0
1873-74	10,322	43,167	6,430	.....	Dec. 6.2	.....
1874-75	14,844	43,344	5,663	Inc. 45.0	.....	Dec. 12¼
1875-76	9,883	54,226	6,036	Dec. 35.0	Inc. 25.3	Inc. 7.1
1876-77	10,544	45,442	6,681	Inc. 7.9	Dec. 16.3	Inc. 10.9
1877-78	9,763	54,101	8,040	Dec. 7.8	Inc. 19.8	Inc. 19.0
1878-79	11,413	50,681	8,865	Inc. 17.0	Dec. 6.4	Inc. 10.2
1879-80	6,685	59,533	10,443	Dec. 43.6	Inc. 17.8	Inc. 19.3
1880-81	7,563	57,408	12,487	Inc. 13.3	Dec. 3.5	Inc. 20.0
1881-82	8,723	61,096	11,095	Inc. 16.0	I c. 6.3	Dec. 11.5
1882-83	10,687	69,276	16,477	Inc. 21.8	.....	Inc. 49.1
1883-84	10,296	55,237	15,012	.....	.....	Dec. 8.7

While the British imports of wheat have increased 36 per cent. since 1871-72, those of flour have more than trebled. The leading countries supplying the United Kingdom with flour and the quantities sent there for thirteen years past have been:

BRITISH IMPORTS FLOUR (SUPPLY SOURCES)—000's OMITTED.

Calendar years.	From United States, cwt.	Per cent. from United States.	From Germany, cwts.	Per cent. from Germany.	From Australia, cwts.	From British N. Am., cwts.	From France, cwts.	Total, cwts.*
1872	731	17	1,034	..	321	337	1,367	4,388
1873	1,582	26	691	..	239	443	1,671	6,214
1874	3,292	53	759	12	226	389	659	6,236
1875	2,279	33	800	..	321	357	1,820	6,136
1876	2,320	39	930	..	445	283	1 089	5,959
1877	1,765	25	1,239	..	1,034	250	1,901	7,377
1878	3,621	46	1,114	16	1,348	302	699	7,828
1879	6,962	65	915	..	1,513	457	355	10,728
1880	6,873	66	977	9	1,123	524	279	10,558
1881	7,693	68	1,387	12	1,097	259	203	11,357
1882	7,800	60	1,987	15	1,567	341	220	13,057
1883	11,270	70	1,928	13	1,738	503	163	16,329
1884	10,235	68	1,765	12	....	...	....	15,012

* Including other countries.

The imports of flour into the United Kingdom during the year 1883 show that of the total quantity received (16,379,317 cwt.) 11,270,918 cwt. were from the United States, or about 69 per cent., as against 59 per cent. in 1882 (when the total was 13,057,403 cwt.) and 68 per cent. in 1881 (when the total was 11,357,386 cwt.) Germany sent 1,928,769 cwt. to the United Kingdom in 1883, or 13 per cent., against 15 per cent. of the whole in 1882 and 12 per cent. in 1881. British North America ranked third in supplying the United Kingdom with flour in the years named, sending 2 per cent. in 1883, 3 per cent. in 1882 and 2 per cent. in 1881. France came forth, with 1 per cent. in 1883, 1.7 per cent. in 1882 and 1.8 per cent. in 1881. "Other countries" sent 15 per cent. in 1883, 20.7 per cent. in 1882 and 16 per cent. in 1881.

In the first nine months of 1884 the imports of flour by the United Kingdom have been 11,961,374 cwt. as compared with 12,245,412 cwt. in a like portion of 1883, and with 8,918,713 cwt. in nine months of 1882. Of the total received from January 1 to September 30, 1884, 68 per cent. was from the United States, 11.8 per cent. from Germany, 10.9 per cent. from Australia, 4.2 per cent. from British North America, 1 per cent. from France, and but 4.4 per cent. (or 504,948 cwt.) from "other countries." These percentages, with comparisons, for the years previously noted are as follows:

BRITISH IMPORTS OF FLOUR.

	Calendar year—			9 mos.
	1881.	1882.	1883.	1884.
United States	68	59	69	68
Germany	12	15	12	11.5
Australia	..	..	..	10.9
British North America	2	3	2	4.2
France	1.8	1.7	1	1
Other countries	16	20.7	15	4.4

Illustrative of the competition in supplying wheat to millers of the United Kingdom, the following specially prepared figures are of value:

TOTAL BRITISH IMPORTS WHEAT.

Cwts.	P'r c't. from United States.	P'r c't. from Russia.	P'r c't. from Germany.
1872, 42,127,726	21.0	42.4	9.24
1873, 43,863,098	45.1	21.8	9.91
1874, 41,527,638	55.6	13.8	7.38
1875, 51,876,517	45.3	19.3	10.8
1876, 44,454,657	43.4	19.8	5.22
1877, 54,269,800	39.3	20.0	10.1
1878, 49,906,484	58.2	18.1	10.3
1879, 59,591,795	60.6	13.4	6.09
1880, 55,263,934	65.4	5.22	1.91
1881, 56,647,903	63.0	7.04	2.38
1882, 62,503,134	54.6	14.9	4.85
1883, 69,276,992	47.6	16.9	...
1884, 55,237,868	41.6	14.5	...

The proportion received from British India, in 1882, was 15.5 per cent.; in 1883, 12.2 per cent., and in 1884, 17.2 per cent.—*Bradstreet's, Nov. 15.*

ITEMS OF INTEREST.

NEARLY all the prominent railroads of the country will, Nov. 16, begin the use of the uniform system of signals recently adopted by the general time convention at Philadelphia. This reform is regarded as only second in importance to the standard-time innovation. By its adoption a competent railroad employe of any road will be efficient in the service of any other road without first serving an apprenticeship in learning a different code of signals. The new system includes signals made with the hand, lamp, bell-cord, and whistles. Some of the most important will be the following: Go ahead, hand or lamp raised or lowered vertically: stop, hand or lamp swung across the track; back up, hand or lamp swung in a circle. Bell-Cord—One pull, start; two, stop; three, back. Flags and Colors—Red, danger signal; blue, signal of caution; white, safety; green, carried on the engine; another engine following, with equal rights with that carrying signal.

THE Westinghouse Machine Company, of Pittsburgh, Pa., issue a circular saying that the company will no longer solicit sales direct from the customer. The capital and energies of the company will be concentrated strictly upon the manufacture of Westinghouse engines, the sales of which have been phenomenal. The effect of this arrangement is practically to double their working capacity, insure the carrying of a larger stock of engines for immediate shipment, and to reduce the cost, also to give the customer the advantage of counsel with an expert salesman. Fairbanks; Morse &&o., of Chicago, in connection with Fairbanks & Co. of St. Louis, control the product for the Western States and Territories; Parke & Lacy, of San Francisco, Portland, and Salt Lake City, for the Pacific slope; and Imray. Hirsch & Kæppel, of Sydney and Melbourne, for Australia and Oceanica. The trade heretofore controlled by the branch office at 94 Liberty street, New York, has been transferred to Westinghouse, Church, Kerr & Co., who have opened offices at 17 Cortlandt street. The firm is composed of H. H. Westinghouse, (president of the company,) William Lee Church, Walter C. Kerr, and I. H. Davis, all engineers and men of business. The new firm's circular announces their business as "contracting and consulting mechanical engineers controling the manufacture or sale of approved specialties." They intend to purchase and control some of the best specialties in machinery and steam engineering. They will in all cases recommend, as engineers, the best article for the situation, whether in ther special list or not. As Westinghouse engines are now built only to 200-horse power, they will contract for heavy plants, from 200 horse power upwards, using such other standard automatic engines as may be best adapted to each case.

WHAT IS ZERO?—Perhaps not one in a hundred can tell off-hand why a point thirty-two degrees below freezing point on Fahrenheit's thermometer is called zero. For that matter, nobody knows. The Fahrenheit scale was introduced in 1720. Like other thermometric scales it has two fixed points, the freezing point or rather the melting point of ice, and the boiling point of water. The Centigrade and Réaumur scales call the freezing point zero and measure therefrom in both directions. This is a very natural arrangement. Fahrenheit kept the principle on which he graduated his thermometers a secret, and no one has ever discovered it. It is supposed, however, that he considered his zero—thirty-two degrees below freezing—the point of absolute cold or absence of all heat, either because, being about the temperature of melting salt and snow, it was the greatest degree of cold that he could produce artificially, or because it was the lowest natural temperature of which he could find any record. The grounds on which Fahrenheit put one hundred and eighty degrees between the freezing and boiling points are likewise unknown.

RAW HIDE WHEELS.—In 1860, just before the war, the writer was employed to start a manufactory, one of the exactions being the construction of a machine for drawing and flattening fine brass wire. The connections of parts were first made of pulleys and belts—they did not hold; gears of necessarily very fine cogs broke their teeth; some were made of steel and hardened, but did not stand. The requisite appeared to be resistance and toughness of material. Raw hide was suggested; and some gears made of that material did their work well. Since then the use of this material has been noticed under similar conditions. Lately hydraulic compressed raw hide has been favorably mentioned as material for friction rolls and pulleys, for skate rolls, and as facings for friction wheels. There is no question of its advantage as a material for small pinion gears where much strain comes on each tooth; if not exposed to the continuous action of oil—animal oil especially—these wheels will bear a deal of rough usage. One of the useful qualities of raw hide is its yielding to a shock or sudden strain without breaking, and without giving a permanent backlash. Steel and the best of Norway iron will break under strains to which compressed raw hide will only slightly and temporarily yield. The teeth of raw hide blanks can be cut in the gear cutting engine as well as those of iron or steel, and the material can be more readily turned in the lathes. If a lubricant is required in the working, clear water is the best.—*Invention and Inventor's Mart.*

THREE engineers who have reckoned the quantity of water pouring over Niagara falls every minute differ only two quarts in the highest and lowest estimates.

PHILLIPS BROS.' well near Butler, Pa, is one of the most phenomenal wells ever seen in the whole oil regions, and all interests is now centered there, to the exclusion of the lately discovered Glade district, which is rapidly waning. Phillips' well was drilled on August 30th, and has been producing since over 1,300 barrels daily, reaching on the 7th 100 barrels an hour. It flows with the regularity of clockwork, the oil gushing out at intervals of nine minutes and a half, the flows lasting about four minutes. Large numbers of people visit the well.

PATENTS INDUSTRIALLY CLASSIFIED.—A table prepared by Commissioner Butterworth shows that of the 300,000 patents issued by the Government, the various line of machinery and industries have received the following number:

	No. of Patents.
Application of electricity	5,872
Artesian wells	500
Beds	2,150
Boots and shoes	5,000
Bread and cracker machinery	440
Chairs	1,580
Corset patterns	969
Dairy utensils	2,428
Fences	2,888
Fire engines	567
Fire escapes	884
Harvesters	6,606
Lamps and gas fixtures	5,254
Laundry utensils	4,993
Machines for knitting	754
Metaling	3,854
Metal working machines	10,203
Methods of tanning hides	1,219
Mills and thrashing	6,740
Nut and bolt locks	734
Plows	6,889
Pumps	3,156
Railways	3,508
Railway cars	3,505
Seeders and Planters	3,568
Steam engines	5,511
Stoves and furnaces	8,230
Vegetable cutters	459
Water distributers	3,717
Wearing apparel	2,400

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, DECEMBER, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for ($10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,500 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and 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 153; 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 we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,500.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 26.

The New American Dictionary and the UNITED STATES MILLER sent postpaid to any address in America for $1.60.

W. E. EDGAR, ESQ., of *The Northwestern Miller*, made us a pleasant call last month.

MILLWRIGHTS wages in Minneapolis vary from $2.25 to $3.00 per day of ten hours.

MR. MUNRO, representative of the Richmond Manufacturing Company, of Lockport, N. Y., called on us recently on his way to Minneapolis.

WE are gratified to learn that our friend and co-laborer in the field of milling journalism, E. A. Sittig, publisher of the German-American Miller, in Chicago, has again been elected to represent his district in the Illinois State Senate.

THE present commercial relations of the German Empire make it impossible for the government to change the present grain tariffs before July 1887.

BILL OF LADING.—CORN IN BULK.—The word "package" cannot by any fair construction be made to apply to corn in bulk, according to the decision of the St. Louis Court of Appeals in the case of Rorestein vs. The Missouri Pacific Railroad Company. In this case, a clause printed on the back of a bill of lading given by the railroad company to the shipper of goods, restricting the liability for all loss or damage "to said packages" to the particular carrier in whose custody they should be at the time the happening thereof, was held not to apply to 70,000 pounds of corn in bulk.

"The Great Empire City, or High and Low Life in New York," and the UNITED STATES MILLER for one year will be sent postpaid to any address on receipt of $1.00

THE German newspapers continue to publish articles asserting that American flour imported into Germany is adulterated Their persisting in publishing such reports after failing to show a single instance of flour adulteration direct from America savors of vindictiveness. It is strange that Germany makes such complaints while Great Britain seldom if ever find anything in American flour to complains of.

THE John E. Belt Bran Packing Co. of Minneapolis, is now running packing, 270 p ckages of 200 lbs. each per day. Size of p ckages 15x15x30 inches. $15,000 has been expended for building and machinery, and up to the present time it has (so it is reported), not proved to be successful financially.

THE work advertised in this paper entitled "THE SCIENCE OF A NEW LIFE," by Dr. Cowan must not be confounded with a publication called "*The Science of Life*" published by a medical institution. Dr. Cowan's "SCIENCE OF A NEW LIFE" should be read by everyone. It is written in a plain style and can readily be understood by any person of average in elligence.

The *Mexican Financier* says: "The dwarf coco grows abundantly everywhere (around the city of Tepic). From its rich kernel the finest lubricating oil known is extracted, as well as the base for a soap, whose appearance and excellence would meet with universal favor. Why some one has not amassed a fortune from the manufacture of this oil here, is one of the many mysteries of favored Mexico. On the low lands, cotton, sugar-cane, coffee, corn and tropical fruits are easily grown, while the elevated plateaus and valleys yield a magnificent grade of wheat. And yet, strange to say, in this populous section, constantly traveled, not a single flour or grist mill is to be found nearer than Guadalajara, 250 miles from the coast."

SPECIAL INDUCEMENTS TO SUBSCRIBERS.

If you are not already a subscriber to the UNITED STATES MILLER, now is your time to subscribe. We call your especial attention to our announcement on page 10. It may be summed up as follows:

We will send the UNITED STATES MILLER post-paid to any address in the United States or Canada for one year and a copy of Ropp's Calculator in plain binding for $1.00, or a No. 3 Calculator and the paper for $1.50; or a copy of Ogilvie's Popular Reading No. 3 and the paper one year for $1.00; or the books entitled "The Great Empire City" or "Fifty Complete Stories" and the paper for one year for $1.00; or the "New American Dictionary" and the paper for one year for $1.60; or "Moore's Universal Assistant and Complete Mechanic" and the paper one year for $2.75. Our readers should not fail to take advantage of these offers, which remain open until we announce to the contrary in our columns. All remittances must be made by postoffice money order or registered letter. Remittances made otherwise will be at your own risk.

BOOK NOTICES.

The Youth's Companion is a paper which it is a pleasure to praise. For it demonstrates that it is not necessary to poison a boy's mind in order to stimulate him. The pulse is made to throb, but with an impulse to do right and to fill a high place in the world's estimation. That this can be done, and that *The Companion* has been able to achieve a circulation of 328,000 copies, is no small testimony to the skill and liberality with which it is edited. Those who know the paper best wonder how any American family is willing to do without it. The price is $1.75 a year. Subscriptions sent in now will entitle to copies of all the remaining issues of this year, as well as to the whole year 1885.

NEWS.

W. W. Potts' mills, at Richmond, Ky., burned October 8th.

A 100-barrel roller mill is being built at Royallin, Minn.

A 75-barrel roller mill has just been completed at White Lake, Dakota.

A $30,000-mill is projected at Dallas, Tex., by Alex. Mason, of St. Louis.

October 15th, Geo. Q. Moore's flouring mills, at Port Dickinson, N. Y., burned.

A new mill will shortly be established by Messrs. Lee & McTavish at Rapid City.

October 14th, Weisenbacker's mill and gin, at Valdosta, Ga., burned. Loss, $2,500.

October 20, 1884, the Pillsbury "A" Mill, at Minneapolis, made 6,197 barrels of flour.

Burned—November 8th—Elliott's flour mill, at Coultersville, Ill. Loss, $25,000; well insured.

October 16th, G. U. Morrison's mill, near Lowville, N. Y., burned. Loss, $12,000; insurance, $6,000.

The Minneapolis Engine and Machine Works of Crocker, Pell & Boardman, are in the hands of a receiver.

The Enterprise Machine Works, of Knoxville, Tenn., have gone into the manufacture of general mill machinery.

The Keystone Manufacturing Co., of Sterling, Ill., lately sent a carload of their power shellers to the City of Mexico.

D. Marreing & Co., Evansville, Wis., have ordered an additional set of rolls, from the Case Mfg. Co., Columbus, Ohio.

The Wabash flouring mills at Anoka, Minn., will soon be rebuilt. The new mill will have a capacity of 2,000 barrels per day.

Miller, Noland & Co., Leetonia, O., are putting in breaks, rolls, scalpers., etc., furnished by the Case Mfg. Co., Columbus, Ohio.

H. O. Wylie & Co., New Concord, O., are putting in rolls, centrifugals, reels, etc., furnished by the Case Mfg. Co., Columbus, Ohio.

Simpson, Morris & Co., Johnstown, O., are making some changes in their mill and are putting in rolls, furnished by the Case Mfg., Co. Columbus O.

D. H. Turner, of Pearson's Mills, Ala., has ordered the machinery for a 3-run new process mill of Nordyke & Marmon Co., of Indianapolis, Ind.

A 2-run mill is being erected at Shady Grove, Ky., for Messrs Jones and Nash, who get their outfit, of Nordyke & Marmon Co., of Indianapolis, Ind.

John Tontz, of Girard, Kansas, is building an improved grain elevator, having procured his plans and machinery of Nordyke & Marmon Co., of Indianapolis, Ind.

The Mazeppa Mill, at Red Wing, Minn., was recently sold at auction, by the assignee, for $28,000 to Mr. Hauser. The original cost of the mill was probably not less than $70,000.

D. C. Bloomfield Sherman, N. J., is making some changes in his mill, and is adding two pairs of rolls with patent automatic feed, furnished by the Case Mfg. Co., Columbus, O.

The bread baked from the flour manufactured by Adam Simpson, of Owatonna, Minn., who is using the "Case" roller system, took the first premium at the late Minnesota STATE FAIR.

Mr Jas. S. Oakes, of Steubenville, Ohio, proposes to erect one of the largest flouring mills in the South, at Chatanooga Tenn. The mill will be located on the river bluff, and will have splendid water and railroad facilities.

The Case Mfg. Co., Columbus, O., have secured the contract of Bonesteel & Butler, Janesville, Wis., for a full line of breaks, rolls, purifiers, etc., for a complete roller mill on the "Case" system, using ten pairs of rolls.

Charles Arter, is building a 2-run water mill at Kirkwood, Neb., using machinery made for him by Nordyke & Marmon Co., of Indianapolis, Ind. This same firm is furnishing the machinery for two other new mills in the same county.

Royce & Shell are commencing the erection of a 100-barrel 7-break roller mill, with water power, to replace the mill destroyed by fire a short time ago. They have placed their entire contract with Nordyke & Marmon Co., of Indianapolis, Ind.

Look at these grain figures of Duluth. The wheat receipts for September and October were 6,527,000 bushels, and the shipments 9,535,000. Still it is only a few years since the wheat trade of Duluth was less than that of Winnepeg now.

The Case Mfg. Co., Columbus, O., have secured the contract of O. P. Cline & Co., Galliton, Mo., for a complete outfit of breaks, rolls, purifiers, centrifugals, reels, etc., for a full roller mill on the "Case" system, using ten pairs of rolls.

William E. Catlin & Co., manufacturers and dealers in mill-furnishing goods at 48 South Canal street, Chicago, Ill., made a voluntary assignment Oct. 20th in favor of Mark M. Pither, of 143 Lake street. The indebtedness will not exceed $2,000, and the assets of the firm are more than ample to meet all liabilities.

The Union Mill Co., of Union, Oregon, recently despatched their president and treasurer East to arrange for the purchase of a 100-barrel roller mill outfit. Their choice fell upon the machinery and roller mills manufactured by Nordyke & Marmon Co., of Indianapolis, Ind., and they therefore contracted for an outfit using 16 pairs of rolls.

Adams & Baker, Neodesha, Kan.; Whetstone & Henderson, of Bloomfield, Ind.; W. H. Ladd, of Wheeler, Ark.; Hughes & Pixlee, Osborn, Mo.; Ferguson & Fullerton Hudson, Ind.; A. S. Nickey, Elizaville, Ind.; J. M. Hadley, Desoto, Kan., and R. M. Stone & Son, of Scotland, Ind., are remodeling their mills to the roller system, using Nordyke & Marmon rolls, bolts and centrifugals, furnished by Nordyke & Marmon Co., of Indianapolis, Ind.

At the great St. Louis Fair, just closed, we are informed that the extensive mill machinery manufacturers, Nordyke & Marmon Co., of Indianapolis, Ind., carried away nine first premiums on different articles displayed by them (among which was their well known roller mill), and also a $300 cash prize for the best display at the Fair; all of which, in view of the many firms exhibiting, makes the affair a creditable victory for Nordyke & Marmon Co.

Charles F. Wardell and Howard N. Hinckly, composing the firm of Wardell & Hinckly, made a voluntary assignment in the county court to Frank R. Grover, Oct. 14. The firm were agents for machinery and boiler fittings at 14 South Canal Street, Chicago, Ill., having been in existence for four years. The liabilities will foot up $40,000, while the nominal assets are $15,000, but in reality only $10,000. The causes of the failure are depression in business, bad debts, and poor collections.

The flouring-mill of Deaninger Brothers, in Adrian, Mich., was destroyed by fire Nov. 25, the origin being attributed to a defective chimney. Loss probably $10,000, on which there is $7,800 insurance in the following companies: Traders' of Chicago, Phœnix of Hartford, American and New Jersey Centennial, and Imperial of London. The building was a landmark, having been built in 1829, by A. J. Comstock, the founder of the city, at a time when southern Michigan was a wilderness.

A news item in this paper last June mentioned that Nordyke & Marmon Co., of Indianapolis, Ind., had introduced 26 pairs of their largest sized roller mills in the 2000-barrel flour mill of the Anchor Mill Co., of St. Louis, Mo. This mill has taken first premium at the St. Louis Fair and Exposition on patent, bakers' and straight flours, in competition with many other first-class mills, and the lucky firm, in a letter to Nordyke & Marmon Co., attribute their success to the introduction of these rolls, and have also placed a large order for more roller mills.

ST. LOUIS ITEMS.—The Eagle Mills are turning out 800 barrels of flour per day. Twenty-five car-loads of bran were shipped to Atlanta one day recently. The St. Gorge Mills make 300 barrels daily. The Laclede Mill has recently added two sets of rolls (Todd's). Jefferson Mills are running full time and turning out 500 barrels per day. H. B. Eggan & Co.'s mill has increased its capacity to 300 barrels per day. The Atlantic Mill has been purchased by Mr. Louis Fuss for, it is said, $100,000. The mill will probably be started up soon.

The Appleton Manufacturing Company, Appleton, Wis., of which G. D. Rowell is president, H. J. Rogers, secretary, and F. C. Treat, treasurer, is a very extensive one. Included in the long list of implements manufactured by this company are the Badgar broadcast seeder and cultivator, the Peerless horse-hoe cultivator, first-class steel plows, harrows, corn-shellers, feed-cutters, gate-rollers, road scrapers, sleds, reversible elevator and carrier, etc. The company has recently purchased the patents of the American Grinding Mill Company. It employs fifty men, and has one of the largest foundries in the State.

Within four miles of Fergus Falls, Minn., there exist two hundred feet of fall, which is sufficient to supply, if made available by god engineering, 15,000 horse-power. Inside of the very city limits there are eighty feet of all with an average flow of 60,000 cubic feet per minute. At seven different points within these four miles spoken of can water-power facilities be had. Five of the powers are now improved, and operate three large flouring-mills, a large paper-mill, and saw-mill, two furniture factories, a plow-factory, a carding-mill, planing mill, pattern-shop, machine shop, two printing offices, and several smaller establishments, although but a moiety of the forces applied is consumed, while the two other powers are yet wholly in reserve.

Fergus Falls, Minn., is growing very rapidly, and it is not only the heart of the Park Region, but is the business center of a large territory through its extensive jobbing and wholesale trade, to say nothing of the manufacturing interests, which are by no means insignificant. There are four flouring mills—roller process—having a capacity of 1,500 barrels per day, and a new one of large capacity, nearly finished, by H. G. Page; a paper mill, lumber mills, furniture, foundry, and machine shops, sash, door, blinds, planing, brick, artificial stone, and many other interests. Probably there is not a more advantageous point in the Northwest for the establishment of additional flour and paper-mills, or for the production of agricultural machinery, etc.

The general prevailing dullness in mill building does not seem to have yet reached the mill building establishment of Nordyke and Marmon Company, of Indianapolis, Ind., for we are informed, since our last issue, that they have received the following contracts for complete mills and for remodeling old-style mills to the roller system; a new roller and stone steam mill for Messrs. Wiley Bros., of Norwich, Ohio; a new 30 bbl. steam mill for Mr. D. L. Yandle, of Marshfield, Mo.; a 100 bbl. eight break steam roller mill for the Montgomery Milling Co., of Montgomery, Mo.; a new roller mill for Mr. Jacob Allinger, of Quincy, Ohio; to remodel the mill of Messrs. Hinkle, Stickney & Co., of Keota, Ia.; to remodel the mill of Mr. Abner Moore, of Irving, Illinois; new machinery for the Nickells' roller mills, Nickells' P. O., West Virginia; to remodel Mr. Shafer's mill, at Lancaster, Mo.; to remodel Mr. V. F. Ferguson's mill at Cressline, Kansas, a new mill of 75 bbls, capacity, using seven breaks, for Mr. A. J. Patterson, of Union Depot, Tennessee.

The Cummer Engine Company report that Mr. Jonathan Mills' Flour Dresser, manufactured by them, is meeting with excellent success, They are selling a great many of them, and are receiving a large number of repeated orders. They are also quietly placing a number of the "Finch" rollers, which are looked upon by all who have investigated them as a very superior roll. The Cummer Engine Company have just been awarded the contract for the refrigerating plant for the brewery of Rothaker Bros. & Thomas, of Philadelphia. This comprises two of their improved refrigerating machines, two condensers, etc. They have also entered into contract with Henry Zeltner, of Morrisania, N. Y., for a large refrigerating plant, including two machines, two condensers, one of sixty-seven horse-power engines, etc., and have received an order for an engine of the same size from the Montgomery Milling Company, Montgomery, Mo. Among the recent shipments of the Cummer Company are the following: A ninety-five horse-power engine for the flouring mills of Amos Bros., Syracuse, N. Y.; two engines, sixty-seven horse-power each, for the Citizen's Electric Light Company, of Akron, O.; a 130 horse-power engine for the Upton Manufacturing Company, Port Huron, Mich.; one of 170 horse-power for the cotton mills of the Hadley Company, Holyoke, Mass.; an engine of 287 horse-power for the railroad shops of the N. Y., W. S. & B. R. R. Co., at Frankfort, N. Y., and a 170 horse-power engine for the cotton mills of W. H. Cherry & Co., Mountain Mills, Ala.

The Case Mfg. Co., Columbus, O., have received the following orders the past month: B. M. Allison, Fairview, West Virginia, for breaks, rolls, purifiers, scalpers, centrifugal, reels, etc.; from the Simpson & Gault Mfg. Co., Cincinnati, O., for one "Little Giant" break machine for H. H. Kremer, Medora, Ind.; from Joseph Bens, Fredricktown, O., for one No. 1 single purifier; from Lucas & Aikens, Uhricksville, O., for one No. 1 single purifier; from Castree, Maloney & Co., Flint, Mich., for two pair rolls and one No. 1 single purifier, for Malt Clapp, Rogersville, Mich.; from Click & Miller, Dayton, Va., for breaks, rolls, scalpers, etc.; from M. S. Crowly, Brookville, for one pair rolls with patent automatic feed; from the Richmond City Mill Works, Richmond, Ind., for one pair rolls, and one single purifier, for Howard & Williams, Hillsborough, Ky.; an additional order from A. J. Vanmeter, Miami, Mo., for one improved "Case" centrifugal reel; J. P. Murphy, Mt. Sterling, Ill., for a patent automatic feed for his purifier; from W. A. Hoffman Implement Co., of Fort Worth, Tex., two pair rolls and one purifier to be shipped to Collins & Black, Ranger, Tex.; from H. Meilzer, Powell, Ohio, for one No. 1 single purifier and one pair rolls with automatic feed; through W. E. Catlin & Co., Chicago, Ill., for one pair rolls with patent automatic feed, for K. C. Arnold, Trenton, N. Y.; from A. B. Childs & Son, London, England, for three pair rolls with automatic feed; from F. L. Burdick & Co., Owatonna, Minn., for a patent automatic feed for purifier; from M. A. Shafer, Avilla, Ind., for one "Little Giant" break machine and scalper; from J. B. Miller & Co., Ashley, O., for two additional pair of rolls with patent automatic feed.

THE CHEMISTRY OF BREAD-MAKING.

BY PROFESSOR CHARLES GRAHAM, D. SC., F. I. C.

[CONTINUED.]

Now these soluble albuminoids occur to a small extent in wheat, even the best elaborated; but they occur to a much larger extent in other kinds of cereals, as barley, for example. Of these, albumin and legumin, so called from the leguminosæ in which it is abundantly found, differ mainly in this respect, that the albumin can be coagulated by boiling, whereas the legumin cannot. In addition to the albumin and legumin, we have also another albuminoid substance called cerealine. Now it is the cerealine which is found so largely in the bran of wheat, and not to the same extent in barley. If we take what is termed botanically, the caryopsis, or the seed, of barley, and moisten it and keep it at a proper temperature in a warm room it will gradually grow, and, as it grows, rootlets will come out from the bottom, while the plumule pushes up inside the testa or skin; as it does so, this plumule, which is growing up inside the testa, gradually by an osmotic action from cell to cell sets up a diastasic change throughout the whole of the berry, so at last, as it grows up and ultimately gives off a stem and leaf, it has greatly affected the starch granules inside the seed. Now, in the case of wheat, the little embryo at the bottom pushes out its root, but at the same time the plumule comes out also, thus the plumule has no diastasic action, except by osmotic action through the cells at the base. Nature, however, partly gets over this difficulty by the diastasic action set up by the albuminoid cells in the cerealine acting throughout the whole mass, so that sugars are formed for the nourishment of the young growing plant. This is the important function of the cerealine in the bran of wheat. Now, barley has got but little gluten, the albuminoids are not of that character, they are not dense and coherent, and rye flour, maize and rice are all equally deficient, and the consequence is that for the preparation of fermented bread there is no cereal that can compare with wheat.

I will ask you now to look at some results obtained by the chemist Péligot. In this table you will find the composition of different typical wheats—Flemish, Odessa, Hérisson, Provence, Midi, Polish, Hungarian, Egyptian, Spanish and Russian. In this table we have the albuminoids divided into those which are insoluble and those which are soluble. This method of stating the results is of very great importance to the baker. If you look at this table you will find, by dividing the insoluble albuminoids by the soluble, that we have in the Flemish a ratio of 3½ of the insoluble to 1 of soluble; in the Odessa, 8 of insoluble to 1 of soluble; in the Midi, 9 to 1; in the Egyptian, 13 to 1; and in the Spanish, 5 to 1.

I only give these as being illustrative of the very great variety that occurs in different cereals. A very interesting point to notice in the table of determinations made long ago by Péligot is this: You will find that if you divide the dextrine, as he termed it, by the soluble albuminoids, you will, with the exception of one or two, find that it is nearly four times as much as the soluble albuminoids; in many cases it is exactly. In Midi it is 1.6 soluble albuminoids to 6.4 dexterine, which is exactly 1 to 4. I can see in the next one, the Polish, it is 1.7 of soluble albuminoids to 6.8 dexterine, showing that there must be some very distinct relation between the amount of dextrine formed and the albuminoid body that has gone to form it. That is an interesting point for chemists.

It is of the highest importance for the milling interest, and also for the baking interest, that a very large and numerous series of analyses made even with further determinations than were possible at the time of Péligot should be made in order to guide the miller in his selection of wheats for the different kinds of flour. I have now to call your attention to a diagram headed "The Influence of Seasons on Wheats," and have marked certain years *, and have marked some years †, and there are one or two years marked with a ‡. Now, if we take those years against which I have attached a *, 1846, 1849 and 1851, we learn that those years were dry years of fine harvest weather, and the result was that the total produce for those years was high. The amount of dressed corn in the total produce was also very high, and, in addition to that, the weight of corn per bushel, which is the farmer's way of determining the specific gravity of corn, was also very high. In 1846 it was 63, and that is a high weight for English wheat; on the other hand if we take 1845, 1848 and 1852, against which I have placed a †, we had wet summers, cold harvest weather, and the result unsatisfactory; such years as, indeed, we have experienced much more recently, and in these cold wet summers and autumns we obtained wheats with a low total amount of produce. The total dressed corn was low in 1848, being only 89, whereas in 1846 it was 93, and in addition to that the specific gravity of the corn was also low; 56 in 1845, and 58 in 1848, instead of being, as I have said before, 63 in a good year. Then we have a high nitrogen; the amount of albuminoids was high, but the amount of resisting gluten was very low—in other words, these flours were ill adapted for baking purposes. On this other table, I have some experiments I made for the purpose of this lecture, in order to point out to you by experimental numbers the character of the changes which take place when flour and water are kept together at about a temperature of 85° F., which is the temperature that the baker employs. Vienna whites, allowed to stand only ten minutes, give us 76 of soluble products. In 2 hours, however, it is as high as 5.16, in 4 hours, 7.2, and in 8 hours 9 73. In second households, we have in the cold 3.01; 2 hours, 5.82; 4 hours, 7.78; in 8 hours, 11.31. Now, in No. 2 we have also in 8 hours 10.15—the brown meal being very much of the same general character as that of No. 2. A small table shows the result of a distinctly soft flour, in which in 4 hours the amount of soluble matter was 10.49, in 8 hours 16.11. When, however, that flour was treated by a method investigated by our distinguished chairman in 1858, with lime (only in this particular instance I simply used a little chalk instead of quicklime) we had a considerable reduction at the end of eight hours; and that is the important point, because the process of the London baking requires a great many hours, and therefore it is desirable to see what influence hard water such as one would get in Kent, or made so artificially, would be. You will see that we are enabled to lower somewhat the amount of soluble albuminoids. That same flour, when heated to a temperature of 100° for several hours, as in the kiln-drying process, gave still better results, and at the end of eight hours the amount of soluble products was reduced from 16 down to 10.6, showing therefore that the heat-stiffening action of the kiln is of the very greatest importance indeed in improving the character of our inferior wheats. due, perhaps, to inferior harvest conditions.

I proceed now to the subject of milling. I am not a miller, and I have not sufficient time, even if I had sufficient knowledge, to entertain you with a discussion as to the respective merits of high and low reduction, of rollers *versus* stones. The City and Guilds Institute of London a few years ago established examinations in the chemistry of bread-making, and due chiefly to the active aid of Mr. Dunham, the proprietor of *The Miller* newspaper, and also aided by active millers taking a keen interest in their trade, they have recently added milling to their curriculum of examination. You are probably most of you aware that the City and Guilds Institute carry on in technology much the same kind of examinations, although I hope better in character, that the Science and Art Department do throughout England, Scotland and Ireland in their May Science Examinations. Milling has been given to those interested in milling, and in looking over the character of the questions set I am bound to say that in a very short time it must stimulate the young millers to study, not merely the chemistry of their art, but to study the engineering part of their profession in a way that has not been hitherto done in our country, and therefore I think that the City and Guilds Institute will do considerable good in this direction.

As a chemist, however, and as I am lecturing upon the best means of preparing wheat bread fit to compare with the beautiful bread of Moscow or Paris, I think the following conditions are essential to be aimed at in good milling. In the first place, the corn must be degerminated, because the germ is an active hydrating and diastasic body; secondly, the bran must be thoroughly eliminated, because the cerealine of the bran has this injurious action on the fermentation, that it produces too great a quantity of maltose sugar and dextrine, and introduces also too large a quantity of soluble albuminoids into the bread, which soluble albuminoid, not the starch, as some people imagine, give high color in the oven. Degermination and elimination of the bran are, I hold, tests of the highest milling, whether it be by rollers or by stones. For brown bread and for whole-meal bread there is a difference, and I will later on point out how we may to some extent eliminate or obviate the difficulties when we employ brown flour or whole-meal flour. A very important point is the admixture of wheats; formerly millers were obliged to use the wheats as they could find them in their own country, but now we have excellent wheats from the United States, from Canada, from the Black Sea, from Australia, and lastly, and not of the least interest, from India and Persia. I read a statement in a newspaper recently that the Indian Government had been making an investigation into the question of the expense of growing wheat in India, and they find the natives can grow wheat for 12s. a quarter—16s. will leave a profit. Some objection has been made to the employment of too large a quantity of Indian wheats when mixed with our own, owing, it is said, although I have not noticed it myself, to the aromatic flavor of bread that has had too large a proportion of Indian wheat ground with our English or other wheats. This is, however, a matter that the miller can readily obviate by a little attention to the admixture, and by not using perhaps quite so much of the Indian wheats. At the present moment we are able to get excellent wheats as low as 32s. per quarter. Now I remember at a dinner, I think it was in 1872, the motto of the Royal Agricultural Society of England was given as a toast after dinner, that motto being "Practice with Science;" and I was associated, being a scientific man, with a practical farmer in replying to that toast. In my reply I referred to some of the advantages of science; but then, speaking to British farmers, I pointed out some of the disadvantages of science; I pointed out how by using both high and low pressure steam on board ship, as Elder was beginning to do, with the development of the railway carrying powers of America, the United States farmer would in a very few years be able to sell wheat at a profit at 40s. per quarter at Liverpool, not only were they very incredulous, but they laughed at me; but do-day you can get it at 32s. per quarter, and this is not entirely due to the great activity of the Americans in growing wheat. The fact is, that the great wheat speculators in America were not aware of the enormous amount of wheat that India can send to us. This great speculation in wheat, what they call the "wheat ring," has broken down completely, and we are now able, thanks chiefly to India, to have wheat at this very low price. It is an additional satisfaction to an Englishman that South Australia, New Zealand and also India, have a large wheat-growing capacity, because in India free trade is the rule, whereas the Americans are protectionists, and by our purchasing large quantities of wheat from India, we may expect, of course, that they will take large quantities of our manufactured products, hardware and cotton, from us in exchange, so that in that way from our colonies and from India we shall not only have cheap wheat, cheap flour for some time to come but also have the prospect of a better condition of our manufacturing industries.

The miller's method of testing wheats consists in judging by their appearance, by the weight per bushel, by the country in which they are grown, and lastly by grinding, by baking some. A distinguished baker in Paris, M. Bolland, adopted a method by which he separated the gluten from the flour, and this gluten was put into a tube, and the tube put into the oven, and according to the amount of expansion of the gluten, so did he decide upon the quantity of the gluten there, and its resisting action to steam—in other words, he judged in that way of the goodness of the flour for the fermenting process of making bread.

The plan which I suggested some time ago was this, that 1 oz. of flour should be mixed with 4oz. of water, and allowed to stand at the temperature of about 80° or 85° for two hours; that it should then be filtered, the first portion of the filtrate will be a little thick, but the latter portion will not be so thick. You put this into a test tube, which you have previously marked at 1oz. and 2oz.; it is filled up to 1oz., and then is mixed with 1oz. of strong methylated alcohol, which we can get for about 5s. a gallon; the result is this, that you obtain a precipitation of most of the soluble matters, of maltose, of dextrine, and the soluble albuminoids; and according to the amount of precipitation, so you would decide as to the amount of soluble matter that would be produced during the sponge stage of bread-making.

I proceed now to consider the question of bread-making. The ways of making bread are very numerous in different parts of the country. I will, therefore, limit myself solely to the London system of bread-making, which is one of the best. The London system consists of three parts—the preparation of the ferment, the preparation of the sponge, and the preparation of the dough. A sack of flour is 280 lbs. in weight, and it should yield from 94 to 96 quartern loaves. In the preparation of the ferment, 6 lbs. to 8 lbs., sometimes as much as 12 lbs., of the very best potatoes are employed; inferior potatoes will not do. These are thoroughly cleansed, washed, cut up and boiled, and then when made into a thin paste they are poured into a tub, and cold water added until the tem-

ANALYSES OF WHEAT (PELIGOT.)

	Flemish.	Provence.	Odessa.	Herisson.	Poulard Roux.	Poulard Bleu.	Poulard Bleu. Dry Year.	Midi.	Polish.	Hungarian.	Egyptian.	Spanish.	Taganrog.
Water	14.6	14.6	15.2	13.2	13.9	14.4	13.2	13.6	13.2	14.5	13.5	15.2	14.8
Fat	1.0	1.3	1.5	1.2	1.0	1.0	1.2	1.1	1.5	1.1	1.1	1.8	1.9
Insoluble albuminoids	8.3	8.1	12.7	10.0	8.7	13.8	16.7	14.4	19.8	11.8	19.1	8.9	12.2
Soluble albuminoids	2.4	1.8	1.6	1.7	1.9	1.8	1.4	1.6	1.7	1.6	1.5	1.8	1.4
Dextrine	9.2	8.1	6.3	6.8	7.8	7.2	5.9	6.4	6.8	5.4	6.0	7.3	7.9
Starch	62.7	66.1	61.3	67.1	66.7	59.9	59.7	59.8	55.1	65.6	59.8	63.6	57.9
Cellulose	1.8	..	..	..	..	1.5	..	1.4	..	..	..	..	2.3
Saline matter	..	..	1.4	..	..	1.9	1.9	1.7	1.9	..	..	1.4	1.6

INFUSION PRODUCTS OF FLOUR.

	Cold. 15 Mins.	Two Hours.	Four Hours	Eight Hours.		Cold.	Two Hours.	Four Hours.	Eight Hours.
Vienna Whites.									
Maltose	trace.	2.41	3.65	4.09	No. 1. Households.	1.36	2.83	4.09	5.39
Dextrine	trace.	2.17	2.79	4.35		0.89	2.34	2.40	3.80
Soluble albuminoids.	0.76	0.58	0.76	1.29		0.76	0.65	1.29	2.12
	0.76	5.16	7.20	9.73		3.01	5.82	7.78	11.31
Best Whites.									
Maltose	none.	1.57	2.04	3.41	No. 2. Second	1.57	6.01	6.01	7.59
Dextrine	1.21	1.48	2.74	2.85		1.04	0.84	1.21	0.67
Soluble albuminoids.	0.71	0.58	0.81	1.54		1.05	1.45	1.31	1.89
	1.92	3.63	5.59	7.80		3.66	8.30	8.53	10.15
Best Households.									
Maltose	1.00	1.36	4.09	3.93	Meal. Brown	trace.	3.41	3.93	4.99
Dextrine	1.13	2.46	2.09	3.79		2.70	0.95	2.09	2.89
Soluble abuminoids.	0.93	0.79	1.23	1.42		0.62	0.70	1.39	1.33
	3.06	4.61	7.41	9.14		3.32	5.06	7.41	9.21

INFERIOR FLOUR.	Four Hours.	Eight Hours.	WITH LIME.		HIGH DRIED.	
			Four Hours.	Eight Hours.	Four Hours.	Eight Hours.
Maltose	6.82	11.14	6.82	8.20	4.44	4.44
Dextrine	0.43	1.23	0.11	2.15	1.78	2.91
Soluble albuminoids.	3.19	3.74	3.34	3.34	2.48	3.29
	10.44	16.11	10.27	13.69	8.70	10.64

INFLUENCE OF SEASONS ON THE CHARACTER OF WHEAT CROPS. (LAWES AND GILBERT.)

HARVESTS.	PARTICULARS OF THE PRODUCE.				COMPOSITION OF GRAIN.			COMPOSITION OF STRAW.		
	Total Corn and Straw Per Acre in Pounds.	Per Cent. Corn in Total Produce.	Per Cent. Dressed Corn in Total Corn.	Weight per Bushel of Dressed Corn in Pounds.	Per Cent. Dry (212° F.)	Per Cent. Ash in Dry.	Per Cent. Nitrogen in Dry.	Per Cent. Dry (212° F.)	Per Cent. Ash in Dry.	Per Cent. Nitrogen in Dry.
† 1845	5,545	33.1	90.1	56.7	80.8	1.91	2.25	....	7.96	0.92
* 1846	4,114	43.1	93.2	63.1	84.3	1.96	2.15	....	6.02	0.67
1847	5,221	36.4	93.6	62.0	....	....	2.30	....	5.56	0.73
† 1848	4,517	36.7	89.0	58.5	80.3	2.02	2.39	....	7.24	0.78
* 1849	5,320	40.9	95.5	63.5	83.1	1.84	1.94	82.6	6.17	0.82
‡ 1850	5,496	33.6	94.3	60.9	84.4	1.99	2.15	84.4	5.88	0.87
* 1851	5,279	38.2	92.1	62.6	84.2	1.89	1.98	84.7	5.88	0.78
† 1852	4,299	31.6	92.1	56.7	83.2	2.00	2.38	82.6	6.53	0.79
† 1853	3,932	25.1	85.9	50.2	80.8	2.24	2.35	81.0	6.27	0.20
‡ 1854	6,803	35.8	95.6	61.4	84.9	1.93	2.14	83.7	5.08	0.69
Means	5,053	35.4	92.1	59.6	82.9	1.98	2.20	83.2	6.17	0.82

perature is lowered to 85°. When this is done, about 2 lbs. of flour are added, and then one quart of good brewers' yeast stirred in; this is the preparation of the "ferment;" fermentation begins, the yeast acts upon the albuminoids of the wheat, and the albuminoids of the wheat so acted upon act then upon the starch of the boiled potato, and the result is we have maltose sugar, and dextrine, and peptone bodies formed. After five hours, the time depending on the temperature, the head falls and then the ferment is allowed to rest for about two hours.

(*To be concluded in our next.*)

NONSENSE.

STOPPING A MILL.—The late Judge Ball, though a charming conversationalist and socially popular, was very irritable. The Cork court-house, in which he on one occasion opened assizes, was backed by an ancient flour-mill of large dimensions, owned by a litigious gentleman named Bendeeble. So close was the mill to the court-house that the noise of the machinery disturbed the tympanum of Judge Ball, who was in his later years hard of hearing. "What noise is that, Mr. Sheriff?" he thundered, with fiery face. "It is a mill, my lord" meekly responded that functionary. "Let it be stopped," commanded the judge. "I can not stop it, my lord," said the sheriff, "the owner is the only one who can do that." "Send for the owner, then," said the judge. This was done, and the order given. Bendeeble took it literally and unconditionally. The mill was stopped, and remained stopped long after the assizes were over. Bendeeble, who was no fool, sued for damages, and the government had to pay a large sum to compromise.—*Every Other Saturday.*

AN old Texan being asked by a stranger to describe a norther said:

"I'll tell you what it is, stranger, a norther puts in the quickest work of anything you ever saw. You see that lake down there (pointing to a beautiful lake about a mile distant), last spring, in the latter part of March, I was fishing in the afternoon; the sun was shining, and it was as warm almost as the middle of summer. The fish was jumping up all over the lake, and they were biting splendidly. A shade came suddenly over the lake, and I thought I smelt a strange smell that often precedes a norther. I immediately turned away from the lake and looked toward the northwest, and I saw a small dark cloud passing like lightning and knew I must hurry home. After looking a short time at the cloud I turned and looked at the lake, when, to my astonishment, the lake was frozen over and many fish were lying on top of the ice. The fish had jumped up, and the lake had frozen over so quick they could not get back. Stranger, maybe you think that is stretching things a little, but I'll tell you a norther can beat anything but lightning, and it can hurry that up mightily."—*Marshall Messenger.*

SCENE—Chatham street.

Mr. Solomons—Ouf yer don't know dot gote vos von of those wot Presidens vears, I don't tell yer, so hellup me grashus. You can take those gote for shust $18. You don't? Vell, if dot gote isn't goin' for $15, by cheminy. Nein, eh? Vell, dot gote I gifs you for nodings at all and $10.

The customer, after a long wrangle, lays a $5 bill on the counter. Mr. Solomons quickly takes up the money and calls out to his wife:

"Py cheminy, Becky, I orders me one of dose Peter Cooper boxes by der ferry-houses. I sells me no more gotes. I am von of dose vot-you-calis-'em—a fillvandthrerpidst!—*N. Y. Star.*

"WHAT is philosophy?" It is something which enables a rich man to see there is no disgrace in being poor.

A colored child recently fell on its head from a two story window, and its mother in narrating the accident said: "Dat yungun was comin' down feet fust wid all the chance in the worl' of being kilt, when er kin' Providence turn he head down; he brack two brick een de pavement, but he didn't eben brack a button off he cloze.

"Is land high in Vermont?" asked a speculator of an old Green Mountain farmer.

"You just bet it is!" was the reply. "If the trees wasn't so stunted, the clouds couldn't get by at all!"

PLENTY OF TIME.—Two men, each carrying a lot of tools, came slowly up to the corner of—street, and there paused. A Milton car had just passed the corner and was fully 20 feet away.

"There's our car," remarked one, calmly.

"No matter," replied his companion, "we'd have to hurry to catch it. There'll be another in an hour," and they seated themselves in a doorway and lighted their pipes.

They were plumbers.

HOW HE ESCAPED.—First Thief—"You're a lucky dog. I didn't expect to see you out so soon. So the jury didn't convict you?

Second Thief—"No."

"And yet there you stood before them with the stolen money in your pocket. It's lucky they didn't search you."

"They did."

"They did? Then they didn't find it?"

"No. I didn't have it."

"Why, what had you done with it?"

"Paid it to my lawyer."

AT the entrance to one of the prominent dry goods stores on Federal street, Allegheny, last evening, a lady, remarkable for the wax-like appearance of her complexion, stood waiting for a car. A young man, accompained by two ladies, passed in and came out in a few minutes. The lady was still standing like a statute in the same position. The young man said, "Now just look at this," and raised his hand and struck the supposed figure a smart slap on the cheek. The statue turned a pair of flashing black eyes upon him and wilted him with a look. He stammered incoherently, "I—I—thought you were a dummy," and almost ran away, allowing his companions to follow as best they could. —*Pittsburgh Telegraph.*

A MEAN TRICK.—A New York business man had just purchased a new stiff hat, and he went into a saloon with half a dozen of his friends to fit the hat on his head. They all took beer, and passed the hat around so all could see it. One of the meanest men that ever held a country office went to the bartender and had a thin slice of Limburger cheese cut off, and when the party were looking at the frescoed ceiling through beer-glasses this wicked person slipped the cheese under the sweat-leather of the hat, and the man put it on and walked out.

The man who owned the hat was one of your nervous people, who is always complaining of being sick, and who feels as though some dreadful disease was going to take possession of him and carry him off. He went back to his place of business, took off his hat and laid it on the table, and proceeded to answer some letters. He thought he detected a smell, and when his partner asked him if he didn't feel sick, he said he believed he did. The man turned pale, and said he guessed he would go home. He met a man on the sidewalk who said the air was full of miasma, and in the street-car a man who sat next to him moved away to the end of the car, and asked him if he had just come from Chicago. The man with the hat said he had not, when the stranger said they were having a great deal of small-pox there, and he guessed he would get out and walk, and he pulled the bell and jumped off. A cold perspiration broke out on the forehead of the man with the new hat, and he took it off to wipe his forehead, when the whole piece of cheese seemed to roll over and breathe, and the man got the full benefit of it, and he came near fainting away.

He got home, and his wife met him and asked him what was the matter. He said he believed mortification had set in, and she took one whiff as he took off his hat, and said she should think it had.

"Where did you get into it?" said she.

"Get into it?" said the man; "I have not got into anything, but some deadly disease has got hold of me, and I shall not live."

She told him if any disease that smelled like that had got hold of him and was going to be chronic, she felt as though he would be a burden to himself if he lived very long. She got his clothes off, soaked his feet in mustard-water, and he slept.

The man slept and dreamed that a small-pox flag was hung in front of his house, and that he was riding in a butcher wagon to the pest-house. The wife sent for a doctor, and then when the man of pills arrived she told him all about the case. The doctor picked up the patient's new hat, tried it on, and gave a sniff. He said the hat was picked before it was ripe. The doctor and the wife made a *post-mortem* examination of the hat, and found the slice of Limburger.

"Few and short were the prayers they said." The doctor brought to the bedside the hat, opened up the sweat-leather, and showed the dying man what it was that smelled so, and told him he was as well as any man in the city. The last we saw of the odoriferous citizen, he was trying to bribe the bartender to tell him which one of those pelicans it was that put that slice of cheese in his hat-lining.

"WILL you have some soup or fish? asked the waiter of a stranger.

"No, sir. Bring me some meat and pertaters, and coffy."

After he had finished his meat and pertaters, and coffy, he leaned back in his chair and said:

"Now, you kin bring in your fish and soup, if you want to, but you shouldn't go trifiin' with a Kansas City man when he's hungry. —*New York Star.*

THE facility with which the banks of this country can be used by dishonest presidents, cashiers, and directors, reminds us of a little story. "An' phwat is yer son James doin' now, Mrs. O'Flaherty?" "Sure, an' he's become a great gintleman, wid such foine clothes on him ye'd not know him. He's in some bank, Mrs. O'Flanigan." "An' phwat bank is it?" "Faith, an' its the Fary Bank I belave they calls it." The difference between some of our banks of issue and deposit and our faro banks is more imaginary than real.—*Bulletin of the American Iron and Steel Association.*

A MAINE FARMER'S FISH STORY.—A farmer who was in town from Wells, Wednesday morning, related a remarkable circumstance which happened in his town one day last week. For some time past the herring have remained away from shore, and the fishermen were unable to obtain them in very large numbers. All at once they began to come in shore, even into the breakers, in immense numbers, probably being frightened by dogfish or bluefish. The number kept increasing, and when the tide went out it left a place of about an acre completely covered with fish. In some spots, were there was a depression in the sand, the fish were piled in to the depth of about five feet. The farmers in the vicinity soon learned of the fact, and they flocked to the shore and secured cart-loads of the fish to be used on their farms as fertilizers. One farmer obtained sixty cart-loads.—*Biddleford (Me.) Times.*

A NEW JERSEY PORCUPINE.—The Millbrook correspondent sends an account of a most remarkable conquest made by four hunters at that place Saturday evening. James and Frank Kimble, Amos Van Gorden, and Abe Warner went on the mountain hunting raccoons. Their dogs, late in the evening, barked up a tree. Hastening to the tree, they saw on a limb about forty feet from the ground what they supposed to be a "coon." Mr. Warner climbed the tree and shook the animal out. When it fell to the ground the dogs attacked it, but it succeeded in running into the rocks and was followed by the dogs. Here they managed, after a sharp and severe struggle, to kill it. The men then took sticks and succeeded in getting it out, when, to their great surprise, it proved to be a large porcupine, which would have weighed at least twenty-five pounds.—*Belvidere (N. J.) Apollo.*

HOW TO HANG A GRINDSTONE—To hang a grindstone on its axle to keep it from wabbling from side to side requires great skill. The hole should be at least three-eighths or one-half inch larger than the axle, and both axle and hole square; then make double wedges for each of the four sides of the square, all alike and thin enough, so that one wedge from each side will reach clear through the hole. Drive the wedges from each side. If the hole through the stone is true, the wedges will tighten the stone true; if the hole is not at right angles to the plain of the stone, it must be made so, or the wedge correspondingly must be altered in the taper to meet the irregularity of the hole.

BUCKWHEAT THRESHING.—There are several ways buckwheat can be threshed. Where it is a special crop and is grown for making flour, farmers make a threshing floor in the field by scraping and sweeping smooth a piece of ground twenty or thirty feet in diameter. The straw is spread here as it is drawn from the field and threshed by the tramping of horses or cattle in the old fashioned way. This rough and ready method has some advantages and some obvious drawbacks. A slow but common method is to thresh with flails on a barn floor. This may do when the barn is not provided with a machine, but the machine does the work very quickly and very well when a necessary precaution is taken. This is to take out the concave, or upper covering of the cylinder, and put in its place a suitable piece of smooth hard wood plank. The grain is quite soft and brittle, and close contact of the spikes of the machine will break much of it, but this change removes this danger. In feeding the machine it is well to crowd it rather hard, so as to save the grain from injury as much as possible; the straw then forms a soft cushion, against which the spikes will beat and knock out the grain without damaging it.

BEWARE of small boots! Three years ago, Adam Pfaff, of Warsaw, N. Y., was drawn as a juryman and wore to court a new pair of boots which were considerably too small for him. Although they gave him intense pain, he kept them on during the day. At night when he removed his boots he found no rest and was unable to sleep. His feet, legs, hands, arms and body began to swell, and a physician was called. Medical aid was of no avail, and from that day to this the intense pain has never left him for an instant. His joints are enlarged, while his feet and hands are swollen to three times their natural size. He is entirely helpless, and has to be fed like a baby. He spent thousands of dollars to gain relief, but no physician has been able to understand his peculiar case.

"SELLING SHORT."

A "short" or "short seller" is one who speculates for a decline in prices. He is the opposite to the operator for a rise. The "short" is a "bear." His antagonist is the "bull," also known as the "long." The short thinks prices are too high and must go down. In order to make the difference between the present price and that to which he foresees it will descend, he goes into the market, borrows a lot of the stock, sells it, and waits for his opportunity to buy it back at a lower price, in which case he will make the difference. He is short in the same way that a man is said to be "short" who has no money. The stock market short has no stocks. He is short of them, and he will have at some time to go into the market and buy enough to replace what he has borrowed. The expression quoted by our correspondent about the shorts unloading their stocks was an incorrect one. Shorts have no stocks to unload. They have to "cover"—that is, buy what are needed to replace the stocks they have borrowed and sold. It is in this necessity of buying back the stocks that he has sold that the great danger to the shorts exists. When they go into the stock market to buy stocks the stocks they are short of they frequently make the appalling discovery that the man from whom they borrowed, and to whom they must return them, are the ones from whom they must buy. There are plenty of persons in Wall street depraved enough to encourage the lambs to sell short and to make it as easy and pleasant as possible to borrow the stock, knowing all the while that only from themselves can the shorts buy the stocks to make their deliveries, and intending when the shorts bid for the stocks to make them pay blood money prices. In this way a Mr. Duff, of Boston, a few years ago made the operators who went short of St. Joe common at 50 pay him 350 for it. When they sold it was to Mr. Duff they sold. It was from Mr. Duff they borrowed the stock which they sold to him, and it was from Mr. Duff they had to buy the stock to return to Mr. Duff. Under these circumstances Mr. Duff kindly consented to let them have at 350 the amount they were short of. Why he did not charge them 1,000 has never been explained: It may have been that he was too good or that 350 was all the money they had. We trust this explanation may open the eyes of the "lamb" to the inconveniences that are likely to attend short sales. A man does not need to be a moralist to see that it is very sinful to sell short if you have to buy back the stock at his price from the same man to whom you sold it.—*Chicago Tribune.*

The wheat trade of the Pacific coast constitutes the most marked feature of the commerce of that section of the country. The total exports of wheat, including wheat flour, from California, Oregon and Washington Territory amounted during the year ended June 30. 1884, to 30,058,634 bushels, of which 24,447,363 bushels were exported from ports of California, 5,384,303 bushels from ports of Oregon, and 226,968 bushels from ports of Washington Territory. The exports of wheat, including wheat flour, to Europe amounted to 26,490,410 bushels, and constituted 88.13 per cent. of the total exports of wheat from the Pacific coast.

This wheat trade with Europe gives employment each year to a fleet of about 400 sailing vessels which pursue the route around Cape Horn. The distance from San Francisco to Liverpool by that route is about 16,000 miles, and the average time of the passage of sailing vessels is a little more than four months.

During the year ended June 30, 1883, there were 440 ships cleared from Pacific coast ports to Europe, of which 110 sailed under the American flag and 330 under foreign flags; and during the year ended June 30, 1884, there were 388 ships cleared, of which 95 sailed under the American flag and 293 under foreign flags.

The question as to the practicability of securing some shorter and cheaper route of transportation to the grain markets of Europe has for years been one of absorbing interest to the people of the Pacific coast. They have from the beginning taken a deep interest in the various projects which have been advocated for the construction of a ship-canal across the isthmus which connects North and South America, and also in the proposition to construct a ship-railway across the Isthmus of Tehuantepec.

A year ago it was thought that a considerable amount of grain might be carried across the continent by the Southern Pacific Railroad to New Orleans, and thence be shipped to Europe. But the depression in ocean rates between San Francisco and Europe has prevented any movement of that sort, the ocean rates being much below any rates which could be profitably maintained by the railroad company.

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Publisher of the "United States Miller,"
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MILWAUKEE, WIS.

If you need any Book, Newspaper, or Magazine, write us. We can furnish at publisher's lowest prices. Mechanical Books a Specialty.

N. B.—We shall be pleased to have millers in all sections of the country write us giving items of news, description of new mills, milling processes, etc.

CONGRESS OF ITALIAN MILLERS.

Last month there was a convention of Italian millers in Turin, the results of which are expected to be of great benefit to the Italian milling industry.

Over a hundred of the leading milling firms were represented, and Signor Garca, of the firm of Grattoni & Co., of Turin, to whom is due the success of the meeting was presiding officer. The following subjects were considered:

1. The necessary steps to be taken to secure lower railroad tariffs; free return of empty sacks and the introduction of suitable cars for carrying grain in bulk.
2. To organize an opposition to the increase of the import duty on grain.
3. To establish a custom among millers not to contract ahead more than ninety days for delivery of flour.
4. To establish milling schools.
5. To found a Millers Association, for the protection and promotion of the milling industry.
6. To prepare a petition to the government, asking that in the future, flour is to be delivered to the army instead of grain.
7. To call in practical millers to give expert testimony in cases where milling interests are brought before courts.
8. To adopt uniform standards for measuring and numbering grades of flour and grain.

MARKETS OF LONDON.—There are fourteen markets of various kinds. The most important of these are: Farringdon dead meat and poultry market; and Deptford Foreign Cattle Market, Islington Cattle Markets, fifteen acres in extent; Billingsgate Fish Market and Covent Garden Vegetable Market; and into these markets are imported annually for consumption in London about 800,000 head of cattle, 4,000,000 of sheep, calves and pigs; also 9,000,000 of fowls, game and rabbits, and over 100,000,000 of eggs, and a like number of oranges and lemons. About 320,000,000 of quartern loaves are consumed in London annually.

THE attention of the East Indian government has been drawn to a tree in southern India, from which large supplies of caoutchouc can be drawn. This is the "tuchmig" of the Chinese, or *prameria glandulifera* of botanists. Unlike the South American tree, from which the caoutchouc is tapped by piercing the bark, the gum is obtained from the new source by breaking the boughs and drawing it out in filaments. If the new caoutchouch is at all equal to the old in insulating properties, it will form a timely discovery, for the introduction, of electric lighting has created an increased demand for India rubber-coated wires.—*Boston Journal.*

COST OF THE HOCKING VALLEY STRIKE.—The Columbus Board of Trade has received reports from a committee appointed to investigate the losses sustained by the strike in the Hocking Valley since June 27th. The loss of trade to members of the Board and to the coal companies has been $1,620,000. The loss to business men outside of the Board has been $350,000. The loss of freight to railroads centering here, $1,100,000. The loss to furnaces in the valley, $225,000. The aggregate losses are $4,011,000. Of this, it is estimated that the loss to the city of Columbus is $3,511,000.

THE ALUMINUM CAP FOR THE WASHINGTON MONUMENT.—Arrangements have been made for the exhibition in New York City next week of the huge metal cap that will be placed on top of the Washington Monument of the national capital. This cap, which has been manufactured at Philadelphia by order of the government, is of the hitherto rare metal aluminum, and weighs only 117½ ounces. It will be burnished, and as the metal does not corrode by exposure to the elements, it will, when in position, shine like polished silver forever. The lightning-rod with which the monument will be provided will be jointed to the aluminum cap, and as the latter metal is the best known conductor of electricity save silver, the rod will not be required to project from the top of the cap. The metal is now produced at Philadelphia in commercial quantities.

WASTE OF OIL.—An old machinist, of nearly fifty years' experience, stated in his shop recently that he had run a countershaft, which he pointed out, on five drops daily of oil, the shaft being one and a half inches diameter and having three bearings in hangers. "Yet," he said, "that shaft has never squeaked." The shaft carried pulleys which drove a drilling lathe, a polishing and wood turning lathe, a small screw cutting lathe, and a grindstone. Most of the weight of these pulleys was between the two hangers on which he lavished two drops of oil a day. He kept his shaft level and in line. The belts pulled almost equally. The boxes were Babbitted. The shaft made about three hundred turns.

The experimenter said that he had tested oils as well as quantity. He believed in clear animal oil—whale or lard. He felt assured that good oil was wasted wherever drip pans were used, and he never used them. There is a text here for establishments to sermonize over, where the shaft bearings drip oil and the floors are soaked with it.—*Scientific American.*

JUDGE C. J. MCFARLAND, who presided over the district courts in Polk c unty, and other counties in centra Iowa, away back in the forty-fives, will be remembered by many of the early settlers. Many anecdote are told of him, and one of the latest received is thus t ld by the Hamburg *Democrat-News:* "In 1855 Judge McF rland, in charging the grand jury in Marion county, said: 'This Maine liquor law— anatics made it, and some people think, it is unconstitut onal, but that is none of your——business. It is your duty to indict all persons who sell liquor. There is plenty of liquor sold in this town. If you want to know where it is sold, wait until cou t adjourns; watch 'he bystanders; see where the lawers go; see where the judge goes.'"

Old man Pettigrew of Austin is very precise in his statements, and is also a strict constructionist. One morning a neighbor rushed in on Pettigrew while the latter was eating his breakfast, and exclaimed, excitedly:

"Your house is on fire."

"Sir?"

"Your house is burning up."

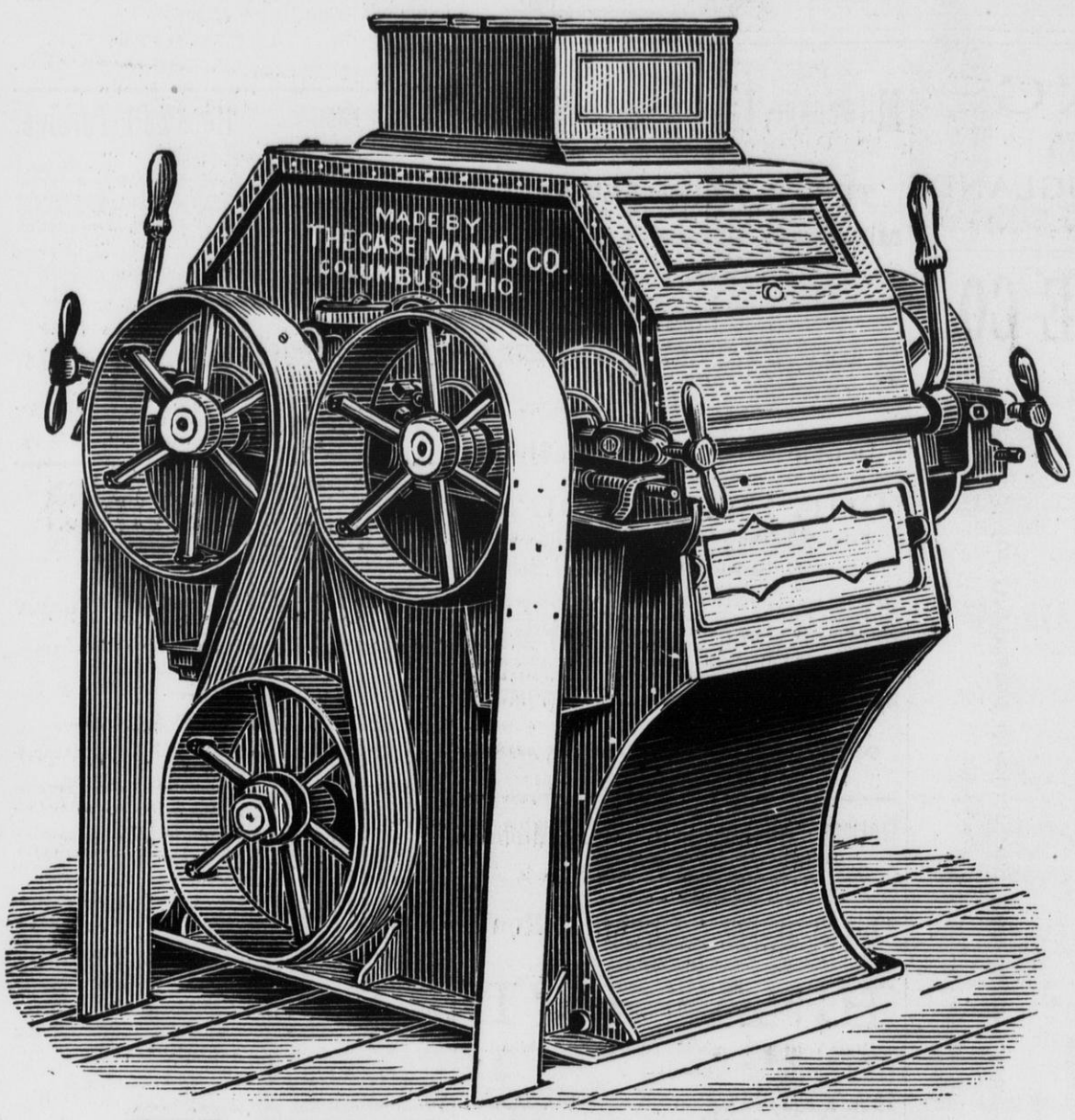
"You are wrong, sir."

"Wrong?"

"Yes, sir; this is not my house. I only rent it."—*Texas Siftings.*

WHAT BETTER EVIDENCE

Need be furnished than such letters as the following of the superior merit of our line of machinery. It is the common testimony of all who deal with us.



THE FAMOUS "BISMARCK" ROLL.

LATROBE, PA., Oct. 20th, 1884.

CASE MANUF'NG CO., COLUMBUS, OHIO.

GENTLEMEN:---We have this day settled with your agent, D. E. DAVIS, and can say to you and the rest of the world that our mill built by you meets fully your guarantee in every particular, and works to our entire satisfaction. The flour made on it is equal to any sold in these eastern markets, and our flour is taking the lead wherever it has been sold. The machinery furnished us by you is first-class in every respect. We do not think your Rolls, Purifiers and Centrifugals can be beaten, they run light and noiseless, and your patent Automatic Feed is absolute perfection. If we were going to build another mill, we should surely adopt your line of machinery, and we are so well satisfied that we have this day presented your agent, Mr. D. E. DAVIS, with a handsome gold watch for fulfilling his promises of giving us one of the best 125 Bbls. Roller Mills in the state of Pennsylvania. Yours respectfully,

LATROBE MILLING CO.,
H. C. BEST, Sec.

P. S.—I fully concur in the above statement.

T. W. WEIMER,
Head Miller for Latrobe Milling Co.

If you contemplate the purchase of any new machinery, write us, and we will try to do you some good whether you deal with us or not.

CASE MFG. CO., COLUMBUS, O.

Send for Catalogue and Prices.

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STEAM ENGINES & BOILERS.
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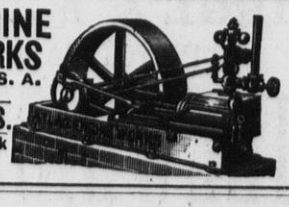

WANTED Immediately, a permanent situation in some Burr or Roller Mill. Have worked second in Burr Mill. Am single, and can give reference. Addres JOHN L. MILLER, Allen Co., Lima, Ohio.

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A horizontal boiler and engine in first-class condition. Boiler 15 horse power. Engine 10 horse power. Can be seen running at the RIVERSIDE PRINTING OFFICE, 124 Grand Ave., Milwaukee. Also Feed Water Heater and line of Shafting.

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FROM 1-4 to 15,000 LBS. WEIGHT.

True to Pattern, sound, solid, free from blow-holes, and of unequaled strength.
Stronger, and more durable than iron forgings in any position or for any service whatever.
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Sell on Commission for
Exporters of American Produce,
Flour, Bran, Oatmeal, Provisions, &c.
REFERENCES:
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Rolls Re-ground and Re-corrugated.

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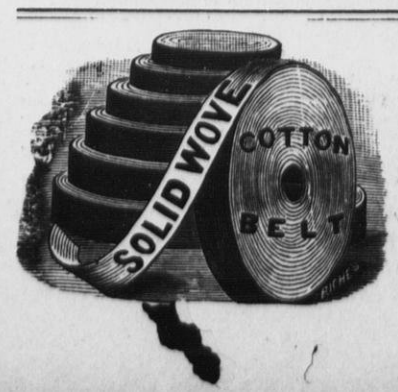
NEENAH, WISCONSIN.



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Prices Close and Quality the Best.

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AND RE-CORRUGATED TO ORDER,

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Our Machinery for this purpose is very accurate. Can do work promptly.

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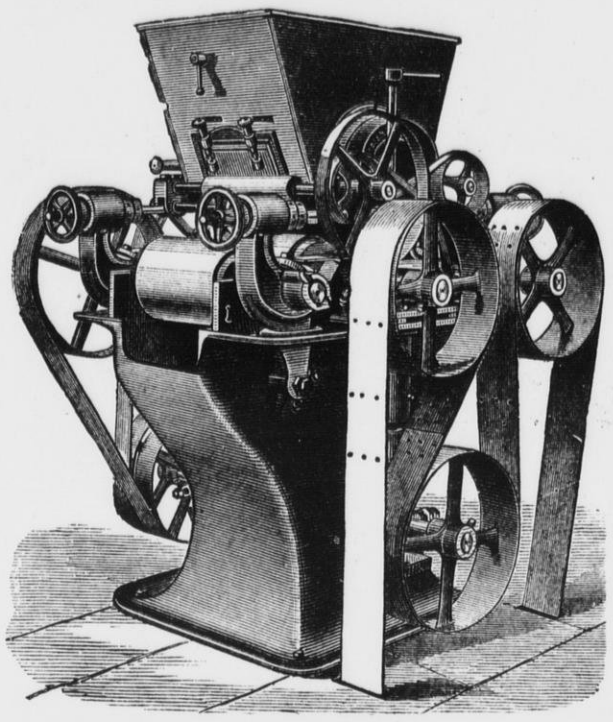

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SOLE MANUFACTURERS OF

GRAY'S PATENT

Noiseless Belt Roller Mills

WITH

Wegmann's Patent Porcelain Rolls.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superseding the use of Mill Stones for this purpose.

Read the Following Letters.

Terre Haute, Ind., Aug. 22nd, 1882.

MESSRS. E. P. ALLIS & Co., Milwaukee, Wis.

Gentlemen :—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double sets sent us soon after starting up our mill last fall, we put in place of two run of stones for grinding our coarse Middlings.

We find the Flour from the Porcelain Rolls much more evenly granulated and much sharper and cleaner than that we got from the stones, besides the second or fine Middlings are much better, being almost entirely free from germs and not as specky.

Yours Truly,

KIDDER BROS.

Kings County Flour Mills, Brooklyn, N. Y., Aug. 15, 1882.

MESSRS. E. P. ALLIS & Co.

Gentlemen:—You ask how I like the Porcelain Rolls as compared with Mill Stones. I have been using the original Porcelain Gear Machines for five years and became convinced a long time ago that Mill Stones could not produce as satisfactory results.

I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong, and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing middlings and soft branny residuums and tailings is unequaled by any Machine, iron or stone, at least this is my opinion after five years of practical experience.

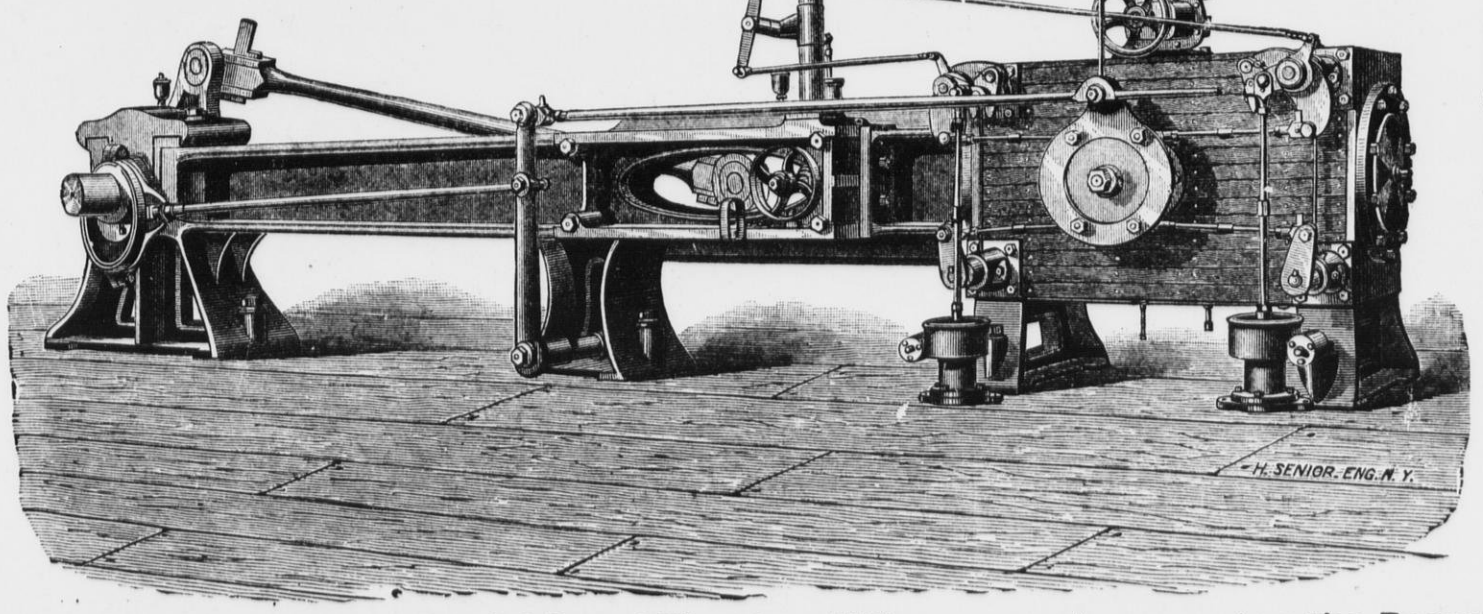
Yours truly, JOHN HARVEY,

Head Miller Kings Co. Mills, Brooklyn, N. Y

ALSO SOLE MANUFACTURERS OF THE CELEBRATED

REYNOLDS' CORLISS ENGINE.

Over 300 of these Engines in use.



These Engines are especially adapted for use in Flouring Mills—being unsurpassed in Simplicity, Durability and ECONOMY OF FUEL, and far ahead of any other

Automatic Cut-off Engines.

☞Send for catalogues of Roller Mills, Flour Mill Machinery, Saw Mill Machinery, Reynolds' Corliss Engines, etc., etc. Address :

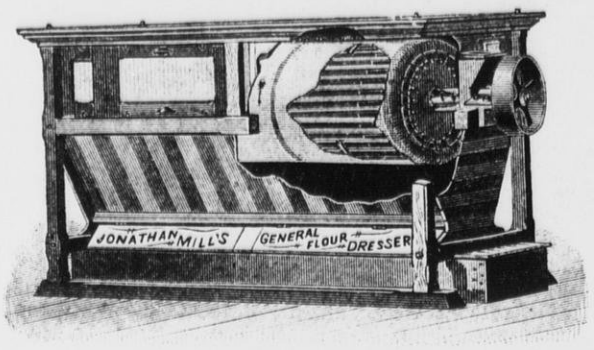
Edw. P. Allis & Co.,

MILWAUKEE, WIS.

The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

J. B. A. Kern	Milwaukee, Wis.
LaGrange Mill Co	Red Wing, Minn.
New Era Mills	Milwaukee, Wis.
Daisy Flour Mills	Milwaukee, Wis.
Winona Mill Co	Winona, Minn.
W. D. Washburn & Co	Anoka, Minn.
Archibald, Schurmeier & Smith	St. Paul, Minn.
White, Listman & Co	La Crosse, Wis.
Milwaukee Milling Co	Milwaukee, Wis.
Stuart & Douglas	Chicago, Ill.
Stillwater Milling Co	Stillwater, Minn.
Otto Troost	Winona, Minn.
E. T. Archibald & Co	Dundas, Minn.
C. McCreary & Co	Sacramento, Cal.
Gardner & Mairs	Hasting, Minn.
J. Schuette & Bro	Manitowoc, Wis.
Minnetonka Mill Co	Minnetonka, Minn.
J. D. Green & Co	Faribault, Minn.
F. Goodnow & Co	Salina, Kansas
A. L. Hill	Faribault, Minn.
Beynon & Maes	Owatonna, Minn.
Eagle Mill Co	New Ulm, Minn
Albert Wehausen	Two Rivers, Wis.
Green & Gold	Faribault, Minn.
Meriden Mill Co	Meriden, Minn.
Townshend & Proctor	Stillwater, Minn.
Sooy & Brinkman	Great Bend, Kansas.
Frank Clark	Hamilton, Mo.
N. J. Sisson	Mankato, Minn.
Jas. Campbell	Mannannah, Minn.
C. J. Coggin	Wauconda, Ill.
J. J. Wilson	Algona, Iowa.
Ames & Hurlbut	Hutchinson, Minn.
Lincoln Bros	Olivia, Minn.
Northey Bros	Columbus Junction, Iowa.
Bryant Mill Co	Bryant, Iowa.
David Kepford	Grundy Centre, Iowa.
Waterbury & Wagner	Janesville, Minn.
W. A. Weatherhead	South Lyons, Mich.
Geo. Bierline	Waconia, Minn.
James McCafferty	Burton, Mo.
Geo. P. Kehr	Menomonee Falls, Wis.
Winona Mill Co. compounding their present 24x60 Winona M.	
Forest Mill Co	Forest, Minn.
L. H. Lanier & Son	Nashville, Tenn.
Wells & Nieman	Schuyler, Neb.
Grundy Centre Milling Co	Grundy Centre, Iowa.
B. D. Sprague	Rushford, Minn.
The Eisenmeyer Co	Little Rock, Ark.
A. W. Ogilvie & Co	Montreal, Canada.
Geo. Urban & Son	Buffalo, N. Y.
A. A. Taylor	Toledo, O.
Pindell Bros. Co	Hannibal, Mo.
Kehlor Milling Co	East St. Louis, Ill.
Walsh, DeRoo & Co	Holland, Mich.
Goodlander Mill and Elevator Co	Fort Scott, Kan.
W. Seyk & Co	Kewaunee, Wis.
Topeka Mill and Elevator Co	Topeka, Kan.
Strong Bros	Graceville, Minn.
C. A. Roberts	Fargo, D. T.
Coman & Morrison	Fox Lake, Wis.
J. G. Schaapp	Grand Island, Mich.
Fred. Schumacher	Akron, Ohio.
Warren Mf'g Co	Warren, Minn.

JONATHAN MILLS UNIVERSAL FLOUR DRESSER



Guaranteed to be Superior to any other Bolting Device

FOR CLEAR, CLEAN BOLTING OR RE-BOLTING OF ALL GRADES OF FLOUR.

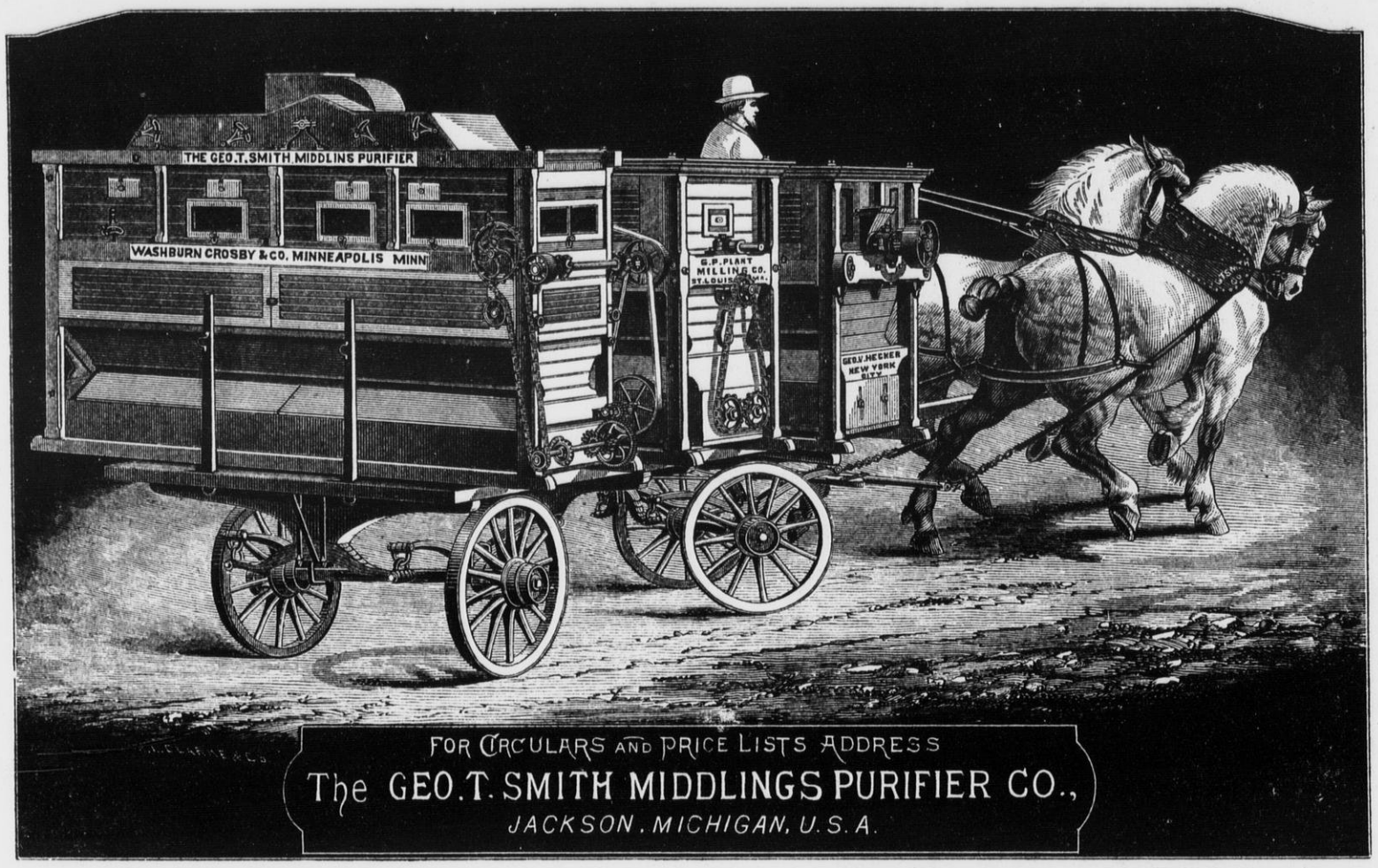
FINELY DESIGNED AND MECHANICALLY CONSTRUCTED;

SLOW SPEED. OCCUPIES SMALL SPACE, AND HAS IMMENSE CAPACITY.

For Price List, Sizes and Dimensions, send to

THE CUMMER ENGINE CO.,

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



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MILL BUILDERS AND MANUFACTURERS,

—SPECIAL AGENTS FOR—

The Steven's Roller Mills

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ROUNDS SECTIONAL ROLLER MILL

With Steven's Corrugations.

OUR SPECIALTIES:—Steven's Rolls, Rounds Sectional Mill with Steven's Corrugation, Smith Purifiers, Lima Bolting Chests, Shafting, Pulleys, Collars, Couplings, &c.

Mills Remodeled to the Roller System. **Results Guaranteed.**

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DE PERE, - - - WISCONSIN.

Alcott's Improved Turbine.

This Wheel is considered one of the most correct that has been devised, gives the highest results, and, with late improvements, is now the best, most practical, and efficient Partial Gate Wheel in existence.

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

State your requirements, and send for Catalogue to

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Send for Catalogue. COHOES, N. Y.

—Established 1856.—

THE EUREKA GRAIN CLEANING MACHINERY

18,000 Machines In Use. 18,000 Machines In Use.

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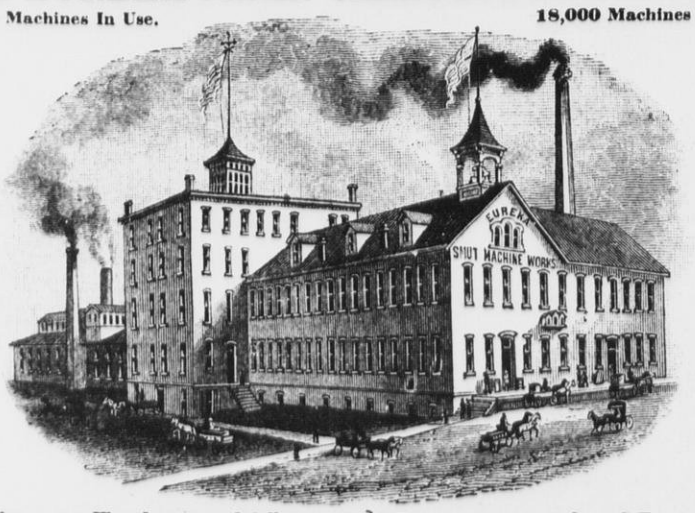

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SILVER CREEK, N. Y.

READ TESTIMONIAL.

Will Grow Poor in the Business.

ELKADER FLOURING MILLS, Elkader, Iowa, March 12, 1884.
COCKLE SEPARATOR MFG. CO., Milwaukee, Wis.

GENTLEMEN:—Your favor of the 5th at hand and noted. We bought one No. 2 machine of you, we think in 1877; it has always done its work satisfactorily and continues to do so. We have not laid out one cent for repairs. If you make all your machines to last as well as ours, you will grow poor in the business.

Yours truly,

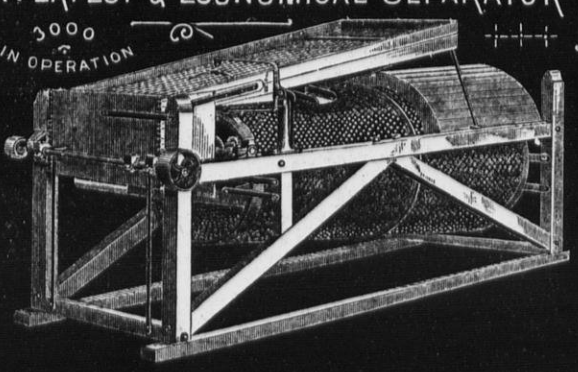
W. SCHMIDT & BRO.

The improved KURTH PATENT

COCKLE SEPARATOR

A PERFECT & ECONOMICAL SEPARATOR

3000 IN OPERATION



ALSO BUILT WITH

RICHARDSON'S DUSTLESS OAT SEPARATOR AND Beardslee's Patent Grain Cleaner.

DIFFERENT SIZES & STYLES. ADDRESS THE

COCKLE SEPARATOR MF'G. CO.

MILWAUKEE WIS.

See Page 41.

The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 18, No. 3. } MILWAUKEE, JANUARY, 1885. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

ENDORSED BY THE HIGHEST AUTHORITY.

The Largest Milling Firm in America,

MESSRS. CHAS. A. PILLSBURY & CO.,

Minneapolis, Minn., having decided to rebuild the "Pillsbury B" mill destroyed by fire in December, 1881, has placed the contract for the entire work of furnishing and erecting a strictly first-class roller mill of 1500 to 2000 barrels capacity, with

Edward P. Allis & Co.,

Reliance Works, Milwaukee, Wis. This is the largest mill ever contracted for in one contract in this country, and in placing the contract, the owners were influenced solely by the superiority of the machinery furnished and work done by Edward P. Allis & Co.

It is further worthy of note that after a thorough trial of several years in the "Pillsbury A" and "Anchor" mills, owned by the same firm, in comparison with the Stevens, Downton, and various other roller mills, the celebrated

GRAY'S NOISELESS BELT ROLLER MILLS

Were selected by Messrs. Pillsbury & Co., as being indisputably the best in every particular, and all bidders were required to figure on using these well-known machines. Parties from Buffalo and Indianapolis were not asked to figure on the work.

The mill will be planned and erected under the supervision of the eminent milling engineer, Mr. Wm. D. Gray, and will add another to the long list of notable mills planned and built under his direction.

The United States MILLER

Published by E. HARRISON CAWKER {VOL. 18. NO. 3} MILWAUKEE, JANUARY, 1885. {Terms: $1.00 a Year in Advance. Single Copies 10 Cents.

THE FOOD CROPS OF MEXICO.

The great cercals of Mexico are maize, or Indian corn, wheat, and barley. The extraordinary fecundity of the maize, ranging as high as four hundred to one, in spite of the lax and rude agriculture, makes it the foremost crop in our sister Republic. Its value in 1883 is given at $114,165,290; that of wheat is stated at $17,598,890; while barley (grown chiefly on the higher portions of the eastern table-lands of the Sierra Madre) is put at $4,503,770. Corn is produced in every one of the twenty-nine political divisions of the Mexican Republic, though its largest growth is found in the States of Jalisco, Guanajuato, Mexico, Oajaca, Michoacan, Puebla, Vera Cruz, San Luis Potosi, Zacatecas, Yucatan and Hidalgo, wherein the annual value of the crop, as named, ranges from about $17,000,000 down to about $4,000,000. These eleven States are, with the exception of Vera Cruz and Yucatan, mainly included within that favored portion of the southern table-land, which, while designated as the *tierra templada* (temperate earth), yields equally of tropical and temperate products. The annual products of the States of Guerrero, Neuvo Leon, Durango, Sinaloa, Morelos, Tamaulipas, Tlascala, Chihuahua, Queretaro, Sonora, Tabasco, Coahuila, Chiapa, and probably Agnas Calientes, ranges from over $3,000,000 down a little less than a million. The heaviest growing States are Jalisco, Chihuahua, Guanajuato, Puebla, Zacatecas, and Coahuila, which produced two-thirds of the whole crop.

Wheat grows on the plateau of Mexico at from 6,000 to 9,000 feet above the sea-level, and between the eighteenth and twenty-fourth parallels of latitude. Corn grows everywhere, except on certain waste districts along the frontier, where the soil is the same as the arid plains of Arizona and New Mexico. The wheat-growing area of Mexico, *par excellence*, extends from, say, Puebla nearly to Colima, about 500 miles east and west, and from Southern Michoacan to Southern and Central Chihuahua, about 500 miles north and south. This plateau is broken by mountain ranges into a number of rich districts specially adapted to the growing of wheat, and of this immense field of rich and arable land one-third, it is believed, could be readily put into wheat with due regard to all other agricultural interests. Under the Mexican plan of cultivation three crops are taken off the land every two years, one crop of wheat and two crops of corn. The average yield of wheat of Mexico does not now exceed 20 bushels to the acre. Corn on irrigated lands runs about 50; on dry land about 30 bushels to the acre. The mode of cultivation is similar to that of the Egyptians thousands of years ago. Wooden-beam plows are used, with small iron shoe, which scratches a furrow five inches broad by five deep. Five men are used and five yoke of oxen where one would be needed in Pennsylvania. Nevertheless, the grain is of the very finest quality, and at the Centennial Exhibition Mexico took the first prize, leading the world in wheat, as in coffee. Threshing is done as in the olden way, on a hard floor, in the open air and by driving mares over the wheat. The grain is winnowed by men tossing it into the air with large scoop-shovels, thus imperfectly separating the chaff. The grain is then taken from the threshing floor to the granaries or railway depot, in ponderous and rudely constructed two-wheeled ox-carts, creaking at every turn. There is more cart than grain in the load pulled by the patient oxen. Already, however, there are marked changes in this primitive method, with its quaint aspects, so suggestive of oriental life and biblical descriptions. American implements and machinery are going in rapidly, and the only danger is that the large land-owners may push the changes required too rapidly for the immediate welfare of the laborers of the country.

Rice is also an indigenous product of Mexico. But little attention has been given to its cultivation until within a year or two past. Some part of the crop is exported, and meets approval. There are large areas in the lower States where the cultivation of rice could be made profitable.

Potatoes are indigenous to Mexico, and are still found growing wild as far north as the table-land or mesas of Southern Arizona. As to barley, it is a grain of the higher region, and grows well at a surprising altitude. The plow in common use in Mexico consists of two poles, one 6 feet long and the other 15 feet, fastened together by a mortise and tenon at an angle of 65°. Through and near the end of a short pole there is a pin to steady the plow, and on its end there is attached a pointed iron or steel shoe to prevent it from readily wearing out. The yoke has no bows, but is fastened on the heads of the cattle by means of raw-hide thongs, and so is the tongue of the plow to the yoke. With this rude implement the fecund soil is scratched to the depth of three inches. The modern and light farming tools used in this country were until very recently almost wholly unknown in Mexico. The machete (sugar-cane knife), clumsy hoes and spades, with a heavy sickle and pruning or cutting knife, constitute most of the farm tools used by the rustic "labores." Burdens are yet borne on the backs of men or women, as a rule; the barrow is a convenience still uncommon off the lines of railroad, and not common even there. The irrigation is largely regulated by manual labor. With the Mexican farmer plowing for wheat begins in August and lasts until he wants to stop. Wheat is sown broadcast from October 1 to January 15, and is harvested the following June. After the wheat is up it looks as if it had been sown with a drill, owing to its having fallen into the furrow made by the plow. From one-third to one-half the wheat is lost by the primitive methods used in threshing. The price of wheat (1883) per fanega (150 pounds) in our money was from $2.75 to $3. The first crop is prepared for in February and March; it is laid by in August, and gathered in December. The second crop is planted in June and July, laid by in August and September, and gathered in December and January. The reason why the second crop matures more rapidly than the preceding one is because no irrigation is needed, the rainy season making it grow with great rapidity.

Tortillas, the common food of the country, are made by placing a quantity of maize in a jar of hot water and lime over night. Great care is taken as to the quantity of lime to be used, as otherwise the grain will not be properly softened. In the morning, or when it is to be used, the grain is taken out of the jar and placed upon a small stone bench, at which a woman kneels, and then, with a long stone roller, reduces the grain to a kind of paste. When it has obtained the proper consistency it is patted with the hand until it assumes the form of small pancakes, which are then slightly dried or baked on a large earthen tray or pan, over a small charcoal fire. The tortilla is made! Everybody eats them. Foreigners, especially Americans, find them detestable. Their preparation is a waste of labor and material both. It is fearful drudgery to the women; and whether so considered or not in Mexico, is to all others who take note of things there as they are, the outward and visible sign of the industrial and social degradation of the mass of women. The preparation of the tortilla takes up so much of their time that no proper care is taken of the dwelling, the children, or of themselves. Some Yankee inventor, who has seen the tortilla-making process, might readily devise a small and cheap machine by which the maize-paste, so much delighted in by the Mexicans, could be furnished to whole neighborhoods. It is hardly possible to change their habits and induce the use of ordinary corn-meal all at once or even extensively, yet it might be done in the cities and be made a profitable venture for some enterprising person.

AN ALL-ROLLER AND CENTRIFUGAL MILL.

We clip the following description of the Eldred Mill, of Jackson, Mich, from the columns of the *Roller Mill*. It will be furnished completely by the Jno. T. Noye Co., of Jackson, Mich., including the Stevens' rolls. The well-known qualities of this firm for efficient and durable work, is sufficient guarantee that the mill will be complete.

"The building is of brick with stone foundations, 45 by 60 feet, four stories high with basement. The average height of each story is fourteen feet from floor to floor. This gives an unusually ample amount of room, even for so complete a line of machinery as will be included in this mill. Connected with the mill is an elevator 25x45 feet and running the full height of the mill. This will give a storage capacity of 30,000 bushels of wheat. Part of the elevator will be used for flour and feed storage.

"The grain will be cleaned on a full line of the most efficient machinery, passing from them to the break rolls. Seven breaks will be made on 9x18 and 9x24 rolls. In all there will be twelve double sets of rolls, smooth, scratch and corrugated, in the mill, and on these will be performed the entire work of reduction. Twelve scalpers, 8x30 inches, will receive the product from the different breaks, and chop from the first five breaks will also be treated on a special break or aspirating purifier.

"In addition to these break purifiers, there will be ten regular purifiers, making in all fifteen of these machines.

"The bolting will all be done by centrifugals, of which there are to be twelve in the mill. Before reaching the centrifugals, however, the material will have to pass through special grading reels of novel construction, of which there are also twelve.

"Another novel feature in this mill will be the entire absence of bran dusters. In their stead will be used two wire-clothed centrifugals, one on bran and one on feed.

"As will be at once noticed, the equipment of this mill is decidedly more elaborate than is usually the case with mills of this capacity, but as it is intended to be in some sense an 'experimental' as well as a 'model' mill, and as the financial resources of its builders are ample, no expense will be spared to bring it as near the ideal as possible. Every minor detail will be given the most careful attention, and the result will be a mill that will be a credit to all concerned in building it, and an object of admiration to the trade at large."

A GERMAN VERTICAL FLOUR DRESSING MACHINE.

A recent number of *The Millers' Gazette* (London) says: Mr. Wilhelm Bernhardt, of Stettin, Germany, has constructed a new vertical flour-dressing machine, in which the meal is passed on to a horizontal feed plate, which is fixed to the vertical beater shaft on the top of the machine. The feed plate, therefore rotates with the beaters, and the meal is thrown by centrifugal force against the vertical inner silk cylinder, which serves as a preparatory dresser. It is clothed either with coarse silk or a fine wire gauze, and is fixed around the beater drum at about ¾ inch distance.

The beater drum consists of six beaters, which are connected with each other by means of horizontally inclined ring segments so as to form continuous spirals. The outer edges of the ring segments come within ¾ inch of the cylinder, whereas the vertical beaters are at least 2 inches from the silk. The ring segments are 1¼ inch wide, and they cause the meal to descend but very slowly in the dressing cylinder, and as the meal is thrown against the silk in an undulatory manner the silk meshes are not likely to clog. The fine particles pass through the inner dressing cylinder, and only the coarse bran descends and is caught in a separate hopper.

At a distance of about ¾ inch from the inner dressing cylinder is fixed an outer dressing cylinder of fine silk, and the air current which is created by the beater drum is strong enough to drive the fine flour through the same, whereas the fine bran particles and the middlings will fall down between the two cylinders and be collected in a separate hopper. The flour is also collected in a separate hopper.

A NOTED CORN MEAL MILL.

Mr. Cyrus W. Field, the widely known New York millionaire, the man who laid the first cable across the Atlantic, and Mr. A. G. Mowbray, the progressive and well known Minnesota miller, until lately superintendent for the Winona Mill Co., Winona, Minn., have begun the construction of what is to be the largest and finest corn, grits and corn-meal mill in the country. Nothing short of the best mill with the best results would be appropriate to Mr. M., who is well known to be an expert miller. These gentlemen have placed the entire contract for the machinery in the hands of the Case Manufacturing Co., of Columbus, Ohio. The reductions have to be gradual and are to be made on "Bismarck" rolls and a general system of scalping, purifying and separations is to followed, much the same as in wheat milling, the reductions and separations, of course, to be adapted to corn. There is now quite a demand for purified corn meal. There is said to be more difference between general reduction corn meal and the old product than between the roller and burr wheat flour. Scalping and purifying between reductions seems to be quite as important as in wheat milling. The trade will watch this particular enterprise closely, and it is expected that much will be developed by it. Their mill will be located a few miles outside of New York City. The work will be superintended by Mr. E. Corbett, of Sandusky, Ohio, who is a "master builder," and has been identified with the Case Co. for many years.

AN INVENTION NEEDED.

The inventor who will devise a cheap, speedy-working power-press, which will press straw or hay into small solid blocks to furnish fuel for our vast, woodless tracks of wheat country, would surely enrich himself. Such a press, if practical, cheap and durable, would confer a great blessing upon the country. Millions of tons of straw and hay are now burned to waste, which by such a device might be converted into valuable fuel. Our present straw-burning engines, although valuable, do not fully fill the bill.

MILLING PATENTS.

The following list of patents relating to the milling interests, granted during the past month, is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, 617 Seventh street, N. W., Washington, D. C.

Issue of Nov. 25, 1884.—No. 308,496—Grain-elevators, Revolving Chute for; J. Hughes, Minneapolis, Minn. No. 308,557—Grinding-mill Roller; W. R. Fox, Grand Rapids, Mich. No. 308,464—Millstone-driver; J. F. Callahan, Knoxville, Tenn. No. 308,568—Roller-mill; T. W. B. Mumford and R. Moodie, Victoria Docks, England. 308,375—Wind-mill; G. H. Pattison, Freeport, Ill.

Issue of Dec. 2, 1884.—308,613—Bolting-reel, Centrifugal; S. Hughes, Hamilton, Ohio. 308,844—Flour-bolt, Centrifugal; J. Kuhnmunch, Buffalo, N. Y. No. 308,650—Grain-separator; R. Brand, Oakland, Cal. No. 308,651—Grain-separator; R. Brand, Oakland, Cal. No. 308,631—Grinding-mill; A. F. Schult, La Crosse, Wis. No. 308,692—Separating-mill; J. Osford, Worthington, Minn.

Issue of Dec. 9, 1884.—No. 308,613—Bolting-reel; D. Schindler, Zurich, Switzerland. No. 309,176—Bolting-reel; J. Warrington, Indianapolis, Ind. No. 308,894—Grain-scouring Machine; J. B. Harris, Ottawa, Ill. No. 308,796—Grinding-mill; J. B. Obenchain, Logansport, Ind. No. 309,078—Mills, Dust-collector for; C. O. Mook, Jackson, Mich. No. 308,978—Reduction-mill, Gradual; T. J. Obenchain, Logansport, Ind. No. 309,100—Rolling-mill; E. Samuel, Philadelphia, Pa. No. 309,077—Wind-mill; J. R. Millard, Los Angeles, Cal.

Issue of Dec. 16, 1884.—No. 309,496—Bolting-cloth, Device for Tightening; G. T. Smith, Jackson, Mich. No. 309,497—Bolting-cloth, Device for Stretching; C. A. Smith, Jackson, Mich. No. 309,294—Grain-dryer; H. I., P. F. & H. G. Chase, Chicago, Ill. No. 309,394—Grain Separator; J. B. Martin, Silver Creek, N. Y. No. 309,196—Grinding-mill; J. T. Case, Bristol, Conn. No. 309,302—Grinding-mill; O. Hoffman, St. Louis, Mo. No. 309,326—Grinding-mill; W. C. Westway, Delavan, Wis.

UNITED STATES MILLER.

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ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 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.*

Publisher's 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 last eight (8) months, including May, 1884, the sum of $160.90, showing that in that time 8,045 pounds of *United States Millers* have been mailed; further, that the foregoing postage paid does not include postage paid on city and foreign papers (Canada excepted). [Signed]

E. HARRISON CAWKER,
Publisher United States Miller.

Subscribed and sworn to before me, this 30th day of June, 1884.

B. K. MILLER, Jr., Notary Public,
Milwaukee County, Wis.

Amount of postage paid for June, $18.26; July $17.62; August, $17.58; September, $17.66. Affidavits will be sent to advertisers from time to time. The original post office receipts can be seen at any time in this office.

MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

ACADEMY OF MUSIC.—Performances every evening. Wednesday, Saturday and Sunday matinees.

SLENSBY'S VARIETY THEATER—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

WE have received a very handsome catalogue from H. W. Caldwell, of Chicago, Ill.

MINNEAPOLIS flour mills turned out a little over five million barrels of flour during the year 1884.

We cordially wish our readers

A Happy New Year!

THE Wisconsin Press Association will visit the New Orleans Exposition in February. About two weeks will be taken for the trip.

ALL the flour mills in St. Louis, when running to full capacity, can together turn out about 19,000 barrels of flour per day.

H. C. RAU, Esq., of the Bradford Mill Co., Cincinnati, O., called on us Dec. 31. Mr. Rau is an old Milwaukeean and takes pleasure in making annual visits to our fair city.

THE last rail has been laid on the Wisconsin Central Railroad to complete the connection of Milwaukee with St. Paul and Minneapolis, and the road will be open for through business on Jan. 12, 1885.

E. CLAKKE, ESQ., of the Australian Flouring Mills, Spencer street, Melbourne, Australia, would like to be favored with copies of catalogues and price-lists from American mill-furnishers.

THE milling trade will be quite well represented at the New Orleans Exposition, as regards machinery and products. One of the most interesting exhibits will be the fully equipped model roller mill constructed by Edw. P. Allis & Co., of Milwaukee.

MESSRS. EDW. P. ALLIS & Co., of this city, are to be congratulated upon receiving the contract for fitting up the Pillsbury B. mill at Minneapolis. The mill is to have a capacity of from 1,500 to 2,000 barrels per day of 24 hours, and Gray's roller mills will be used. We believe this is the largest milling contract made during the year of 1884.

WE were favored with a call during December by Geo. T. Smith, Esq., president of the G. T. Smith Middlings Purifier Co., of Jackson, Mich., and Mr. Clark, of the same company. The gentlemen struck Milwaukee during a bitter cold spell of weather, but, we think, managed to enjoy the visit right well, anyway. Come again, gentlemen, when the thermometer stands above the freezing point.

BRADSTREET'S gives the number of failures in the United States during the year 1884 at 11,600, with liabilities of $240,000,000, and assets $130,000,000. The number of failures in 1884 exceeds by about 1,000 those in 1878, during which the greatest commercial depression was experienced prior to the revival of trade in 1879. May we not believe that the worst is past, and 1885 will witness another great revival in all lines of trade?

MR. CHARLES TOUAILLON, of Paris, France, died Dec. 1, aged 73 years. He was one of the best known French milling engineers. He was the author of many works and essays on milling engineering and the inventor of several machines used in flour mills. He was a firm believer in the utility of millstones for reducing grain, and was bitterly opposed to the introduction of any system of rollers for milling in France.

A GLANCE at the column headed "Business Items," in another portion of this paper, makes plain the unwelcome fact that small millers throughout the country are fast succumbing to the reigning depression. The tendency of the times is toward centralization of the milling business, and, if continued, will result ultimately in the financial ruin of a large number of small country millers.—*St. Louis Miller.*

J. V. W. of Athlone, Ont., propounds the following to the UNITED STATES MILLER: "I think of building a barrel-flume out of scantling three inches thick. Have a head of 23 feet and a "Little Giant" water-wheel 14 inches in diameter. The gate in the throat of the wheel is 6 by 8 inches, and the capacity of the mill is about 50 bushels in 10 hours. The flume is to be 450 feet long and under ground. Now, I desire to know what size the tube ought to be to convey sufficient water, and to what part of the penstock will it be best to connect the flume, and if a short drop at the head of the flume would be of any particular benefit to it?" *Answer.* Tube should be 30 inches inside. Put upper end of flume 2 to 3 feet below the surface of headwater. The tube should enter the penstock as near as convenient, and to avoid angles in current as much as possible.

THE insurance question is one that will never cease to be a most important one with millers. The stock companies keep up their rates as high as they dare to and expect to obtain business. The millers' mutual companies are all doing well, we believe, but they are not yet numerous enough, or strong enough, financially, to carry all milling fire risks. This being the case, mill-owners will have to make the best terms that they can with reliable companies.

THERE are no hod carriers in Germany. Bricks are passed from hand to hand. The higher up the bricklayers are the more men are required to toss the bricks. Two men to a story is about the average, with enough more to lead from the front of the building to the place where the bricks are needed. One may sometimes see three men on the ground, eight on the front of the building, and five on the top, making sixteen men through whose hands each brick passed before it reached its place of destination.

THE conclusion to be drawn from the fact that all of the great mills of the country are running nearly up to full capacity, is that they are making money. Millers do not like to work for nothing, any better than any other class of manufacturers, neither do they keep their mills going simply to give employment to operatives. The margins are, no doubt, in all cases, very small, in comparison to what they have been in the past, but it is evident that large mills, properly equipped for the very economical manufacture of flour, are making money. Medium sized and small mills are not doing so well, and old-fashioned mills, with few exceptions, have "dropped out of sight."

A COMMERCIAL traveler for a house manufacturing grain cleaning machinery recently told us that less attention was paid to the running of the cleaning machinery than to any other class of machinery in the mill. Hundreds of millers would scarcely ever pay any attention to the cleaning machinery from one month to another, unless they were compelled to by a clog up or breakage. It speaks well, he said, for the machinery to be able to turn out work at all satisfactory with so little attention. It should never for a moment be forgotten that wheat should be thoroughly cleaned before it is ground. This advice has been given so long and so often that old millers don't like to hear it. Well, don't, then; but let the young miller heed it. *Pay strict attention to your cleaning machinery and see that your wheat is perfectly cleaned before grinding.*

THE holiday number of the *Northwestern Miller*, with a handsomely lithographed cover, illustrated with many "quaint and curious pictures of forgotten lore," and brim full of good things appropriate to the occasion, has come to hand. It shows the happy result of many months of hard labor, and we trust that the publisher will be rewarded not only by the warm appreciation of the trade, but by ample financial returns. That Minneapolis millers and mill-furnishers took a hearty interest in the success of the number is evident by reference to its pages, and Mr. Palmer may well feel proud of such substantial home endorsement. We congratulate him on the fine appearance of this, his second annual holiday number, and hope he may find it both pleasurable and profitable to continue these handsome numbers as the years pass on.

ANTON KUFEKE & Co., flour merchants, Liverpool, Eng., under date of Dec. 11, make the following report

Markets have been quieter during the past week, and at Tuesday's market a decline of 1d. per cental was quoted. The weakness is caused mainly by the fall in New York. The trade in flour has been very satisfactory and a large business has been done. Any change in values is in an upward direction, but it must be remembered that during the recent rise in wheat there was no corresponding rise in flour.

Hungarian flours are harder to buy and 6d. more is asked; buyers, however, strenuously resist the advance. Minnesota millers refuse to sell for shipment, except at 1s. per barrel advance, which is unobtainable here; this class is scarce on the spot. St. Louis and winter wheat flours are sparingly offered from America, but are plentiful on spot. Choice and family grades are 6d. higher. Californian flours have sold well at late quotations, and this class is very scarce. Oregon and Walla Walla flours are still offered at the late low prices. The quality of these flours has been most satisfactory throughout the season.

The arrivals for the week ending the 6th, amount to only 266,742 qrs. of wheat and flour, which shows another reduction in stocks. The total imports into the United Kingdom since Sept. 1, amount now to 4,527,864 qrs.

FIGHT YOUR OWN BATTLE.

The question of wages for the laboring man and the advantages he may derive from a trade union, was uppermost in our mind one day last week as we were passing a large work-shop in this city just as the employes quit work for the day. "Hello, boys, how many hours do you work per day, and what do you get for a day's work?" was our salutation, which was followed by a hearty handshake, such as a mechanic only can give. In a few moments there were two or three dozen greasy, dirty, but intelligent workmen around us, all willing to chat a few minutes. The question of wages came up, and everyone seemed perfectly satisfied. Their wages and hours of work are regulated by the union. We talked with one man who said he had worked at his trade twenty-seven years. "Then you are a boss mechanic?" we said. "No, I am a blacksmith's assistant," he said. "Well, you must have had a poor boss if you have worked faithfully for twenty-seven years and have never risen higher than a laborer," we said. He was a quiet man, an intelligent looking fellow, and in answer he said: "I have had the same boss for thirteen years, but I never set in to learn the trade; I have just worked for wages!" He was getting $1.35 per day and paying monthly dues to a laborers' union "to protect the laborer in his wages." We learned afterward that the man on the other side of the anvil had only been working at the trade six years, and was getting $4.00 per day. He set out to learn the trade, and he don't need anybody to protect him in his wages. He can get a job anywhere.—*Southern Lumberman.*

MINNESOTA farmers are dissatisfied with the grading of wheat at the various elevators in that State, and now have a bill before the State Legislature to regulate wheat grading. Hon. C. A. Pillsbury of Minneapolis, does not think that legislation of any kind will materially benefit either the farmers or elevator men. During the last session of the Minnesota Legislature Mr. Pillsbury worked for the passage of the bill now before it. In a recent interview on the subject Mr. Pillsbury said:

The truth is simply this: The elevator companies are sick and tired of the present system, or rather want of system in the grading of wheat throughout this section, and I was then, as I am now, in favor of any law or suggestion which would relieve the buyer, not only from the annoyance, but from the suspicion which seemed to be attached to all transactions. My private opinion is that no bill which can possibly pass the Legislature will improve the present condition of the farmer. The fact is they have matters pretty well in their own hands now. Most of our elevators come out short in weight as well as in grades; and most of those who have been doing business in the Northwest came out far behind on grading on last year's crops, while many private elevator people were absolutely ruined. Only one of the seven or eight private elevators, paid a dividend. One trouble is that wheat is graded too high here. Some of the wheat they grade as No. 1 hard will be received, and in Chicago it is No 2 regular. The farther west you go the higher the grade is. Wheat that grades as No. 1 in Duluth would not grade at that in Minneapolis, and a large portion of wheat that grades No. 1 in Minneapolis will grade No. 2 in Chicago. The real evil farmers suffer under is over-grading, not under-grading. Men who raise No. 1 hard wheat are the real sufferers. The highest price paid for any certain quality of wheat, will, by the law of nature, adjust itself to the value of the present quality that may be admitted to that grade. In other words, the real quality of the grain furnished averages itself. Take No. 1 regular or call it No. 1 hard, make a rule to grade it at No. 1 hard, and the man who has got the No. 1 regular is getting no more or less for his wheat than if it was regular; but the man who has got No. 1 hard suffers in consequence of this, because the market price of No. 1 hard is not as high as it would be if the grade were strictly maintained everywhere. I shall, as a member of the Legislature, strongly advocate State inspection, not because I think it will do the farmers any good, but because I think the farmers want it.

GERMAN MILL STATISTICS.

According to statistical returns lately published by the Imperial German Statistical Office 331,179 persons are dependent on the milling industry. Of these 45,255 persons are proprietors, directors, etc.; 2,451 managers, superintendents, and clerks, 70,385 operatives and laborers, or a total of 118,091 persons directly employed in milling. There are besides 20,022 persons employed as domestic servants, and 193,066 persons who form the families of the above milling industrials, making a grand total of 331,179.

Among the 1,000 industrials, 6.33 are employed in milling, and among 1,000 of the general population 7.32 are operatives, servants, and family members of milling industrials.

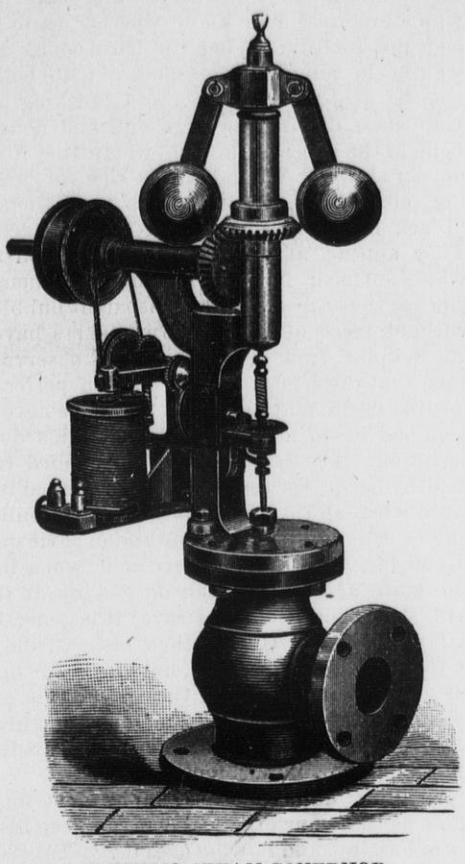
The age of milling industrials is shown in the following table:

AGE.	PROPRIETORS, DIRECTORS, &C.		MANAGERS, CLERKS, &C.		OPERATIVES AND LABOR'S	
	Male.	Female.	Male.	Female	Male.	Female
Under 15	.....	.....	6	.....	1378	28
15—20	81	18	143	1	16404	169
20—30	4797	124	999	8	27052	310
30—40	12851	287	684	9	13093	121
40—50	12687	677	365	6	7148	107
50—60	8129	702	156	2	2961	57
60—70	3765	360	59	2	1223	33
70&above	687	90	11	..	291	10

Jacob Avery was mangled to death in his grist-mill, at Greenbush, Wis., on the evening of the 22d inst. He had come in contact with a set screw on the main shaft of the machinery, and had been whirled until his clothing parted, his body striking the floor at every revolution.

THE AMET ELECTRIC GOVERNORS.

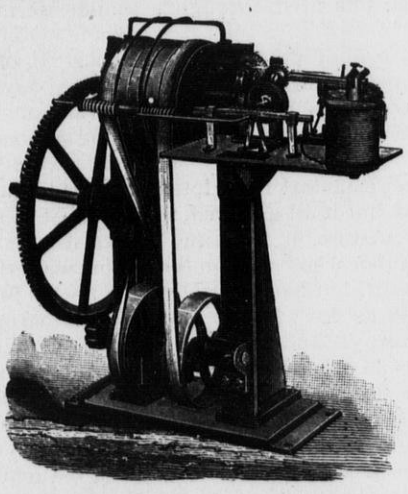
The object of the electric governors, herewith illustrated is to regulate the speed of the engine and dynamo by the strength of the electric current required to supply the number of lamps in the circuit; that is, the greater the number of lamps in the circuit, the greater will be the speed required of the engine and dynamo to furnish the electricity. This is accomplished by a small train of gears driven by a small round belt from the shaft of the governor pulley, and two driving friction wheels moving in opposite directions, which, by means



ELECTRIC STEAM GOVERNOR.

of an electric magnet, included in the electric light circuit are brought into frictional contact with a larger friction wheel, connected by bevel gears and a screw with the valve stem of the governor, thus varying its length according to the speed required of the dynamo for the number of lamps in circuit.

A test of the Amet Electric Steam Governor was recently made at Carnegie's Rolling Mills, Thirty-third street, this city, at which the



WATER-WHEEL GOVERNOR.

governor, though working under exceptionally difficult circumstances, did all that the inventor claims for it.

The steam driving the Westinghouse engine, furnishing the power for the electric lights in the above test, was taken from a large pipe which was supplying one of the large engines running a train of rolls in the mill, and whenever the latter engine required an increased amount of steam the pressure was considerably reduced on the Westinghouse, thus giving the new governor a much larger range of duty to perform than is ordinarily required of any governor.

In the test, at first four lights were cut out of the circuit, thus decreasing its resistance and increasing the strength of the current, which by means of the magnet on the governor, brought into play one of the friction wheels and lengthened the valve stem on the governor, reducing the speed of the engine and dynamo to that required to furnish the number of lights in the circuit. Next, thirteen more lights were cut out of the circuit, to which the governor as promptly responded, and when all the lights are thrown out of circuit the engine is just kept in motion, but ready to furnish power when required.

This principle is also applied to a governor for electric light circuits driven by a water wheel, where it is equally efficient.

These governors are made by the Globe Electric Engineering Company, 35 to 41 Indiana street, Chicago, Ill., from whose circular we make the following extract:

"These governors are designed to afford protection to the dynamo from such causes as lamps cutting or going out accidentally, short circuiting by grounds or other means, or from any cause that would tend to decrease the resistance to such an extent as to be harmful to the dynamo. It is especially designed for large circuits of lamps, but will control from one up to one hundred or more if they are all in the same circuit. Where a system of electric lighting is extended over a large area, as in the case of the towns or cities from one central station, and it is desirable from economical or other motives to limit the consumption of carbons and power by placing the lamps under the immediate control of consumers, to be cut in or out of them at pleasure, this governor is invaluable. The parts are few, simple and durable, and require but the attention of an ordinary steam governor.—*American Manufacturer, Pittsburgh.*

WASTE IN THE WORKSHOP.

One of the most common amongst the many sources of everyday expense incidental to the carrying on of an industrial business, and one most generally neglected by those whose duty it should be to prevent it, says the *Mechanical World*, of London, is that of waste in the workshop and amongst the employes. Although the amount in each particular case may be, and probably is, of small proportions, and is consequently considered of little or no consequence, yet in the aggregate it really becomes an expensive item, which tells heavily upon the debit side of the ledger when accounts are balanced up.

In some shops the quantity of small articles, such as screws, nails, panel pins, washers, etc., that may be seen lying upon the floor, kicked about by every passer by, is astonishing. There seems to be no idea of their value, either by the workmen or foreman. If a man drops such a slight article he will not take the trouble to pick it up, and the result is that all around the ground is littered with them, they soon become covered with shavings, sawdust and rubbish, and when the sweeper comes at stated times to clear up he as likely as not shovels half of them into his barrow, wheels them away to the fire, where the rubbish is burned, or throws them in with the ashes and other refuse of the ballast heap. Even if he carries a box, as he often does, into which he may throw say one half of what is dropped, they become of very little use, from the fact that nails and screws of all kinds and sizes become mixed and jumbled up together unless properly sorted into their various kinds, and this is just what is left undone in the majority of cases. We do not imagine that it would be feasible for a man to stoop down every time he drops one of the small articles in question, but he at least might be made to take that trouble occasionally, and put them back in their proper receptacle in his nail-box. As it is, whatever is once dropped may be considered lost. This looseness, too, leads to another and greater evil, and that is peculation and petty theft. It is not to be wondered at that a man, seeing these things treated as if of no value, says to himself as he picks them up and puts them in his pocket: "These nails will come in useful to make that fence or fowl-house in my garden," or "These screws will just do for the box I am going to make for my wife at home." In fact the men look upon it as a kind of perquisite to supply themselves. We even know of one instance in which a coach maker was accused of stealing certain pieces of brass known as "lap plate," which he had sold to a marine store dealer, successfully pleading that it was a perquisite to keep the ends of these plates, as it had been customary for the workmen to do so. Even such comparatively large articles as bolts, nuts and rivets are often seen strewn about the ground, especially out of doors, where they get trodden into the earth. The amount of old iron, etc., that is shot out at the heaps or tips of rubbish would well pay the employer to keep a man to look them over. As it is, women and boys may often be seen outside the works raking over these heaps and making quite a good thing out of the cinders and old metal which they collect. The same waste often takes place at the sawmills where good-sized pieces of expensive wood, such as teak, mahogany, etc., too small to be utilized on the premises are cut up for firewood instead of being sold to makers of small articles, fancy goods or others. Again, the brass dust and filings made by the fitters are collected in trays fixed to the vises in some establishments, but are swept up with the dirt and wasted in others. Another instance may be mentioned in that of oil, which is often allowed to drip and fall from the shafting pedestals upon the floor, making everything about them greasy and dirty, but which if caught in tin dishes suspended beneath may be used again for the same or other purposes. In the case of gas, too, extravagance requires checking in some factories where it is allowed to flare away at full pressure all over the place without any control, the supplies being of the largest size and most extravagant pattern. If a man leaves his work for an hour or two he does not think to turn down his gas, but allows it to burn all the time. In another better regulated shop, however, the burners are of a duplex or some other economical kind, pressure regulators being fixed upon the various branch pipes to control the consumption, which often varies very much at different times, as some divisions are turned off or put on. The waste in this item alone in a large manufactory with some hundreds of jets burning every day would, if carefully examined into, be found rather startling. Even in the case of drinking water where it has to be paid for by meter the waste is often two or three times what there is any necessity for. A man goes to the tap we will say for a can of water. He turns on the water, but, instead of filling it at once and walking away, he rinses it out two or three times, takes a drink, throws the rest away and then fills it and carries it off, totally oblivious of the fact that all the time this manœuvring is going on the water is running away. Now a push tap, which allows the water to run only while it is pressed with the thumb, would be found economical in such a case, and would at least save a portion of the waste. Even in the offices the differences may be often noticed between a loose and thrifty system of using the stationery. The waste-paper, such as envelopes, etc., is in some places thrown away or burned, while the clerks think nothing of taking a new sheet of writing or foolscap paper, or a memorandum form, to work out their calculations. In others the envelopes, fly-leaves of letters, etc., are set aside, not only for this purpose, but are utilized, as are the backs of useless vouchers, invoices, etc., by printing on them and using them about the premises for instructions to foremen, reports, etc., being as good as new for such purposes. In some drawing offices the amount of tracing paper and cloth wasted, too, is considerably more than there is any necessity for. Some draughtsmen will cut their paper recklessly leaving five or six inches margin, which has to be cut off ultimately, or will put the roll of paper back in a dirty drawer, or on a dirty table, thus making a soiled mark along the outside of the roll, which must be cut off by the next user, thus involving another waste of six or seven inches. Scores of such instances of unnecessary waste might be cited had we the space, which must occur to anyone conversant with workshop practice, but the above will suffice to show our meaning. The greatest cause is carelessness amongst employes and want of sufficient supervision. It is their employer's material and not theirs, and so they do not trouble themselves to economize unless compelled to. The same men when they are at home are most careful of their own coal or gas, and if they are doing any little carpentering job of their own will drop on their knees and scarch for every nail in the most careful manner; then why not be taught to do so for their masters? In this case, as in many others, a careful and intelligent foreman soon saves the amount of his wages by a systematic encouragement of thrift and a condemnation of those men who are the greatest offenders. A few words will generally suffice to put a check on the practices, while making an example by discharging a few men will have a wholesome effect upon the rest.

CORN AT $100 PER EAR.

A few weeks ago the Rev. James O. Broxton, of Bloomfield, Ill., had Franklin Relefond jailed for stealing five ears of corn. Relefond lay in jail several weeks, and was cleared because the corn stolen was worth less than ten cents, and did not, under the State law, constitute a larceny. Relefond sued for damages and got them. The damages, costs and attorney fees amount to $500, which makes the Rev. Broxton pay $100 for each ear of corn for the theft of which he sought to punish Relefond.

BRAZIL'S HIGH TARIFF.

Our consul general at Rio de Janeiro sends to the state department at Washington an informing and suggestive communication dealing with Brazil's tariff duties on imports. The following list includes the articles which the United States could most largely export to Brazil and secure a constant demand for under more favorable conditions:

	Import duty.
Wheat flour, per barrel	$ 64
Maize, per 100 pounds	15
Pork, per pound	9
Hams, per pound	8
Bacon, per pound	13
Butter, per pound	11
Cheese, per pound	9
Shirting, per pound	20
Calicos, per pound	37
Fence wire, per pound	2
Axes, spades, hoes, etc	1½
Carpenters' tools, etc	4½
Kerosene, per case	1 30
Men's boots and shoes, per pair	1 10
Watches and clocks, each	1 00
Pianos, each	83 50

It will be seen from this selected summary that the duty imposed upon the several staple necessaries actually exceeds their original cost. If Don Pedro's lawmakers adhere to the Mosaic sanitary code they should prohibit hog products absolutely; but if they tolerate the sale and use of pork in any shape it is hardly fair to make it a luxury by the imposition of a tariff exceeding 100 per cent. ad valorem.

While our surplus food stock and our manufactures are thus barred out of Brazil, it might be worth while to discuss the advisability of levying a discriminary and retaliatory duty here upon the Brazilian coffees.

At the same time let us not forget that our own beneficent tariff levies a four times heavier duty upon blankets than upon diamonds.—*New York Star.*

THESE lines occur in a prologue written by the notorious pickpocket, George Barrington, for the opening of the first playhouse, at Sydney, Australia, January 16, 1796. The performances on this occasion were entirely conducted by convicts, and the price of admission was a shilling, payable either in money, corn, meat, or spirits, at the market rate.

The prologue opened as follows:

From distant climes o'er wide-spread sea we come,
Though not with much *eclat* or beat of drum;
True patriots all, for be it understood,
We left our country for our country's good.

"WHAT are you crying for, little boy?" asked the kind hearted gentleman from the country who reads the newspapers.

"I have lost my money, sir," sobbed the child.

"Where did you lose it, my little man?"

"I dropped it in Wall Street, sir."

"Great heavens! Are even children drawn into the great gambling maelstrom? What stock did you drop it in?"

"I dropped it down a cellar grating, sir."

TO WELD COPPER.—*The Mechanical Engineer* says it may readily be done in the following manner: "Get a can of concentrated lye, and put the contents in an iron kettle over the fire. Melt the lye (without water), and when it boils up take it off. Scarf the copper to be welded as you would an iron rod; take a good heat, and use the lye as a flux, dipping the scarfed ends in it just before bringing to a welding heat. We have welded copper rods, § inch in diameter, with this, so that no one could tell where the junction was."

THE electrical units are derived from the following mechanical units:

The Centimeter, the unit of length.

The Gramme, the unit of mass.

The Second, the unit of time.

The Centimeter is equal to 0.2937 inch, or one thousand millionth part of a quadrant of the earth.

The Gramme is equal to 15,432 grains, the mass of a cubic centimeter of water at 40° C.

The Second is the time of one swing of a pendulum making 86,464.09 swings per day, or the 1-86,400 part of a mean solar day.

THERE is sufficient water-power in South Carolina to turn the spindles of all new England, and yet most of the rivers run down to the sea unimpeded in their flow. The streams are never closed by ice, and they rarely ever rise so high as to interrupt the running of the mills that have been established on her banks. On every side there are the crude materials for the manufacture of almost an endless variety or useful and ornamental articles of commerce. The matchless climate and vast recources make South Carolina a paradise for manufactures.

GAUGE COCKS.—When gauge cocks become worn so that they begin to leak, it is very poor policy to continue them in use. They should be at once repaired or new ones substituted. When it becomes impossible for an engineer or fireman to close a cock after "trying" the water, he is very apt to try it only when he is obliged to, and very naturally, too. The possible risk thus incurred of letting the water get low in the boiler is one that no steam user can afford to take.

PRESSED GLASS.—It is stated that pressed glass is turned out in the Siemens works that is as hard and tough as cast iron. It is far lighter and not affected by temperature, etc. It is intended to make out of this hard crysr tal, street lamp posts, stairs and gas and water pipes. It is thought these articles can be made 30 per cent. cheaper than in cast iron, but will not, of course, be so heavy.

In the January HARPER'S, by way of contrast with our wintry weather, Mr. Barnet Phillips will describe the balmy delights of "The Cruise of *The Wallowy*" along the Florida const. *The Wallowy* was a schooner-yacht chartered at Cedar Keys by a party of six Northern tourists, and her cruise of three weeks off the west coast of Florida was made at a cost of about $400. Those who wish to know "how to do it" for themselves will be especially interested in the paper, which will have charming illustrations from the pencils of R. Swain Gifford and others.

Kansas averaged 42 bushels of corn per acre in 1884. The secretary of the Detroit, Mich., Board of Trade estimates the average cost to the Michigan farmer of raising and delivering wheat in the Detroit market, to be about 80 cents per bushel.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

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[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, JANUARY, 1885.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for ($10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,500 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and 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 we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,500.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 41.

THE Minneapolis millers have not entirely discarded the use of millstones, there being 141 run of stone now in use in the various mills in that city.

D. G. TEPPER, ESQ., publisher of *The Millers' Journal*, New York City, called on us Dec. 11. He contemplates changing his weekly journal to a monthly.

THE failure of THE MILLER CO., of Canton, Ohio, is announced. It is an incorporated company with $60,000 capital. The company has been manufacturing Rider's wheat break machine, steam pumps, etc.

THE following report comes from Marseilles, France: At a meeting of twelve hundred representatives of the milling industry, a protest was entered against the raising of the import duty on grain.

HON. J. A. LEONARD, United States Consul-General at Calcutta, India, in a late report to the Department of State, conveys some interesting information. In short, the average wheat acreage in India is about 26,000,000 acres, producing in a fairly good year about 244,000,000 bushels. With a good rainy season following an average wheat crop, so as to secure an autumn harvest, one-fifth of the wheat crop can be spared for export without materially raising prices. With low prices prevailing in Europe, the exports have fallen off considerably from those of last year, and they probably will not increase until European prices are more favorable.

SPECIAL INDUCEMENTS TO SUBSCRIBERS.

If you are not already a subscriber to the UNITED STATES MILLER, now is your time to subscribe. We call your especial attention to our announcement on page 10. It may be summed up as follows:

We will send the UNITED STATES MILLER post-paid to any address in the United States or Canada for one year and a copy of Ropp's Calculator in plain binding for $1.00, or a No. 3 Calculator and the paper for $1.50; or a copy of Ogilvie's Popular Reading No. 3 and the paper one year for $1.00; or the books entitled "The Great Empire City" or "Fifty Complete Stories" and the paper for one year for $1.00; or the "New American Dictionary" and the paper for one year for $1.60; or "Moore's Universal Assistant and Complete Mechanic" and the paper one year for $2.75. Our readers should not fail to take advantage of these offers, which remain open until we announce to the contrary in our columns. All remittances must be made by postoffice money order or registered letter. Remittances made otherwise will be at your own risk.

THREE HUNDRED AND NINE WORDS WRITTEN ON A KERNEL OF WHEAT.—The "*Allgemeine Muehlen und Machinen Industrie Zeitung*," says: In Reimnitz-Sarat, there is a kernel of wheat put on a needle in a glass tube, on which there is a quotation from Victor Tiersot's Works on Vienna which contains 309 words written with a pen, and at the same time so clearly, that most of the words can be read with a small microscope. The author of this work of art is a certain J. Sofer, who improved his time, while being in a synagogue, to become so perfect in miniature penmanship. Besides using wheat kernels, he uses the edges of visiting cards to practice his art on.

THE Portland (Ore.) *Journal of Commerce* urges Oregon farmers to stop raising wheat and turn their attention to dairying. The latest reports show a large decrease in the acreage sowed to wheat in all the winter wheat states, and, doubtless, there will also be a great decrease in acreage in the spring wheat states. The prospects indicate, therefore, that even with a favorable crop year in 1885, there will be a smaller crop of wheat than during the year 1884, while the amount required for home consumption will be greater. These conditions appear to point to higher prices for wheat and flour in the near future.

DURING the past nine months, Great Britain has imported 11,961,374 cwt. of flour, 68 per cent. of which was received from the United States, 11½ per cent. from Germany 10½ per cent. from Australia and 10 per cent. from other countries. Statistics indicate that the American export of flour will soon be equal in value to that of wheat. Wheat-flour is now in value the third leading export of the United States, cotton being first and wheat second. For the year 1881-2, the value of cotton exported is placed at $199,000,000; wheat $112,000,000 and flour $36,000,000. In 1882-3, the cotton exports were worth $247,000,000; wheat $110,000,000, and flour, $54,000,000. In 1883-4, the cotton exports are placed at $197,000,000, those of wheat at $75,000,000 and of wheat flour $51,000,000.

UTILIZING STALE BREAD.

The persistence shown by the Parisian bakers in keeping up the price of bread, notwithstanding the great fall in the price of flour has drawn attention to the confraternity and brought out some old facts in connection with the trade. In addition to the bakers proper there are, it seems, a number of second-hand bakers in Paris, who trade in the broken scraps which daily accumulate in all large establishments—such as hotels and colleges—where bread is consumed on a great scale. This refuse is bought by weight, the best bits are picked out and sold to the cheap restaurants, which turn them to account in various ways. The bread soup and other culinary concoctions on which customers are regaled in the cheap restaurants, where a dinner of courses is to be had for 20 cents, are indebted for a portion of their ingredients to this source of supply. The similar and less profitable morsels are baked a second time and ground in a mortar. The powder is then sold to the pork butchers, who use it to garnish the hams and cutlets which present such an appetizing appearance in their shop windows.

ITEMS OF INTEREST.

A COMPETENT and experienced millwright gives, as the result of his experience of 38 years, that iron pulleys should be faced with leather, particularly if the belt is not to be shipped, as from fast to loose pulley. His plan is to cut the leather of the proper width, slightly wider than the pulley face, soak soft in water, and then apply it to the pulley by stretching, using copper rivets to secure the butt joint and an occasional rivet on the edge, the leather is put on flesh side outward. Next to the leather face he prefers a built-up wooden pulley, the segments of wood to be secured in an iron frame, with the ends of the grain outward. Such pulley faces, he claims to be greatly superior to polished iron, or to wood with the grain horizontal.

"ONE of the greatest mistakes," says an English architect, "in outside chimney building is the use of porous bricks and thin walls, by which the smoke, becoming cool in its ascent, by virtue of its heaviness descends into the room. It is almost needless to point to the necessity of building chimneys, particularly the stacks, of unporous bricks jointed in cement, and in lining the flue with fire-clay pipes. Terra cotta is the best material for stack construction, as the flues can be rendered impervious."

A HEAVY wheat train pulled into Fargo by one engine, a few days ago, on the Northern Pacific Railroad, consisted of 110 cars loaded with wheat. This would make, allowing 550 bushels to the car, a weight of 3,630,000 pounds, while the cars weigh 2,729,000 pounds, making 6,359,000 pounds pulled by one locomotive, or about 3,180 tons. The train was over three-quarters of a mile in length.

BOOK NOTICES.

We have received the first number of a new monthly journal entitled "POWER." In the announcement of the publishers, they say:

Among the subjects treated will be how to buy, set, fire, and clean boilers; how to select, set up, run, repair, and take care of steam, gas, and hot-air engines, and all other motors; to choose, lay out, erect, and care for lines of shafting, with their accompanying pulleys, belting, gearing, etc.

The new journal will certainly have enough subjects to discuss. It is published by the *American Railway Publishing Co.*, New York, and Robt. Grimshaw, M. E., is editor in chief.

"THE BOOK-WORM."—A unique, handsome and delightfully readable little monthly magazine, containing for the year over 300 pages and many fine pictures, all for 25 cents a year, is a recent characteristic product of *The Literary Revolution*. Each number contains attractive selections from some noted book, —the last presents Prescott's famous chapter on the "Spanish Inquisition." What will interest a vast number of book-buyers will be the regular monthly news of the *Revolution's* progress,—an enterprise that has wrought wonders in the book world. A specimen of THE BOOK-WORM will be sent free to any address. JOHN B. ALDEN, Publisher, 393 Pearl st., New York.

SCOTCH (THICK) FLOUR BARM FOR SQUARE AND FANCY BREAD.

Commonly Known as Parisian Barm.

BY A GLASGOW BAKER.

I purpose showing in this article that Scotch bakers can and do make healthy barm, and keep it so without the slightest scientific knowledge, being solely guided by sight and taste. The grounds for this statement I shall fully advance after giving the recipe.

Ingredients.—Fifteen pounds malt crushed, 4 lbs. English hops, 3 qrs. home winter wheat flour, 1 qr. hard spring wheat flour (either Baltic or American.)

Mode.—Boil hops with 3 gallons water for 15 minutes, with this liquor mash the malt; temperature, 165°; allow it to be in a tub for 4 hours, then wring or squeeze the malt by hand, keeping in mind that the last drops are the most valuable. Strain through a sieve of 6 holes to the inch, add 2 gallons hot water. The liquor should now be about 130°, which is the proper heat for the batter. This is made by adding flour, and doughing up the liquor to the consistency of a dough for morning rolls as made in Scotland, or Vienna rolls in England. Your tub, containing the batter, must be 24 in. wide by 27 in. deep. It must now be drawn close to the boiler for you to draw your water, which should be 220°. For stirring use a stick of hard wood, 1½ in. in diameter, 4½ ft. long. Two men must be standing by, as stirring must be performed at such a speed that the strongest man cannot continue stirring more than 3 gallons without a rest. The operation should be continuous, each man taking the stick alternately as the other rests. The most trying stirring is when the third 3 gallons have been added, because here the scald must take place. If you are to have perfect scald 50 to 60 seconds will suffice. The stirring speed should be 120 to 130 strokes per minute. You will now know whether your water has been perfectly boiling, as the scald will be so thick after 45 seconds stirring that the strongest man will have difficulty in driving the stirring-pole through it. The mixture has now lost the appearance of raw flour and water, and assumed a rich yellow hue, and has the sweet taste of cooked flour The critical stage has now been passed. Continuing the stirring at 70 to 80 strokes to the minute, you add in two equal portions 6 gallons more water, stirring about 70 seconds for each of the 3 gallons. Your scald is now made and should be put in a cellar with a fair ventilation, and at a temperature of not less than 60° in winter, and the nearer this temperature is kept to in summer the less difficulty will arise in keeping the barm sweet and regular. After standing 4 hours several rents will appear across the surface, and little patches of white froth will rise from these rents. These will continue to grow larger for the next 18 hours. The scald may be stored from 24 to 36 hours old provided the heat is not over 80° for weather such as has been experienced in November, 1884. The mode of storing barm is as follows: Put this quantity of scald into a tub double the size of that used for scalding, add 3 gallons of healthy Parisian barm, and 14 lbs. fresh flour, stirring well, cleaning sides of tub thoroughly. It will be up its full height in the tub in about 10 hours, and in from 18 to 24 hours time it will have dropped in the tub about 6 inches. It should at this stage be divided into coolers—tubs 24 in. wide 12 in. deep. Twelve hours after this it may be used for English or fancy bread, but for Scotch square batched bread it requires 48 hours in the coolers to mellow it sufficiently. New barm gives too much bulk, and cannot be skinned or piled, as the Scotch bakers term the texture of the loaf. Barm for storing should not be more than four days old, that is from the date of storing.

I have in the foregoing treated of the methods of producing healthy barm, and I now offer a few hints as to the signs by which practical men know whether barm is or is not healthy: When the barm comes up well in the tub, with thousands of little bells coming up to the surface, and breaking as they come, driving the large dull and floury bells to the sides of the tub, where they disappear slowly. When barm is ripe for cooling, clear bells, or, as bakers term them, "black bells," appear on the clear surface. They appear, at first sight, "black" on a white surface; but, on looking into them, you see they are simply a transparent bubble without trace of flour. Barm makers have got to know, from a long course of observation, that these are the sure signs of perfect healthy barm, and they state they have never seen bad bread made from barm of this description. The term "Lifey" is applied to healthy barm; the term "Dead" is applied to barm when all the active, healthy little bubbles or cells cease to come up and explode on the surface. By the very face of it, when in this state a practical man on looking at it will shake his head, and say, "It is gone; I will not use it." He will then taste it, and, if the taste bears him out, he will make up his mind to put it down the sink. This is the knowledge the practical man has, and his discoveries, it will be observed, are made through sight and taste only.

It will naturally be asked? "Why don't you show us that your practical man can keep his barm healthy, and how he does it?" This is how it is done. When he sees the bubbles rising feebly, he at once says there is want of "life" or "forces," and will infuse fresh life, by storing half from a young barm 36 hours old, and half the 48 or 72 hours sickly barm. This will, under ordinary circumstances, bring it right, but if the appearance is still dull, he will keep adding every time he stores a new scald, a larger proportion of the young barm, till he is satisfied he has brought it round. The only exception to such is when barm gets fired, through a thunderstorm, in which case, as a rule, it is completely killed and cannot produce sweet bread. It often happens, however, in a cellar with, say, 10 tubs of barm, that only half or so are affected by the electric fluid, the remaining ones keeping quite "healthy." In such a case the baker can start fresh lots from the uninjured tubs, but if all are fired, then he must go and get a store of "healthy" barm from some neighbor who has been less unfortunate than himself; but here again he must use his judgment as to whether his friend's barm is "healthy," and I have never known a practical man deceived in such. Many of the men who make the barm in the largest bread factories in Scotland, have no scientific knowledge of barm. They never read a book on the subject, nor have they ever heard the matter spoken of. Many of the barm makers in Scotland started as careful lads, entrusted with the scalding of the tubs with boiling water, which is most essential, in order to kill the particles of old fermentation; and I have known such lads who could neither read nor write become highly successful barm makers.

This article is not written to show that science is useless to bakers, but is a simple statement of facts, showing the stage of perfection at which practical men had arrived before scientists took the subject in hand. I have known such bakers who did not require to change their store for two years at a time, and have had successful runs of sweet barm for years. I trust I have made myself sufficiently clear, and will be pleased to answer any questions on the subject that your readers may think fit to ask.

GOOD ADVICE FROM AN HUMBLE TAR.—When William IV. was high admiral of the fleet he happened to be in Portsmouth one day, and in his walk he came across a drunken tar embracing a lamp-post. The tar took no notice of the high admiral, who being rather hurt at this want of courtesy, turned around and said:

"My man, do you know who I am?"

"No, I don't."

"I am the lord high admiral of the fleet."

"A d—d good berth, too, and mind you stick to it," was the reply.

WE have received several inquiries during the past two months for the address of manufacturers of suitable machinery for making pearled wheat and barley. Such manufacturers will do well to send us their addresses.

THE CHEMISTRY OF BREAD-MAKING.

BY PROFESSOR CHARLES GRAHAM, D. SC., F. I. C.

[CONTINUED.]

The baker then proceeds to the next stage which is the preparation of the sponge, or "stirring the sponge." In making the sponge one-fourth, or according to some bakers one-third, of the flour is taken, placed in the trough, the ferment added through a seive which retains the potato-skins, the water in the ferment and sponge being about 30 quarts; bear in mind I am always speaking of the sack of 280 lbs. of flour. The quantity of water, however, varies slightly with the kind of flour and slightly with the baker's own particular practice. The other ingredient is salt. Now many London bakers do not use salt in the sponge stage, nor is it needful in the very highest classes of flour; others, however, prefer to use some of the salt, and the quantity of salt therefore used in this stage varies. The amount altogether used for a sack of flour is 3 lbs., or 48 ozs., that is ½ oz. for each quartern loaf. Now salt acts as a check upon fermentation. The more salt you add to the sponge stage the more you check the degradation or breaking up of the albuminoids. The sponge being made ferments, and in about five hours it breaks, carbonic acid being given off, and in an hour it rises again, and again breaks. This last will depend on the temperature. After the second break, the remainder of the flour, be it three-fourths or two-thirds, according to the practice of the baker, and the remaining portion of the water, is added; the total quantity of water for the whole sack is 60 quarts. These are thoroughly mixed together, and in the dough stage many bakers, as I said, add the whole of the salt, Those, of course, who have used part of the salt in the sponge stage, simply add the remainder. Of late years machinery has been invented to do away with the mixing of the dough; it is very hard work, and I should be glad for those of you who have time to look not only at the very useful mixing machine of Mr. Pfeiderer, but also to look at the mixing machine of Melvin, of Glasgow, in Mr. Marshall's model bakery, which consists of a number of revolving cutters which mix up the dough. The dough well mixed is then left for an hour, it rises, it is then scaled, that is to say, weighed and put in the oven, where it remains for one hour and a half, the atmosphere of the oven being about 300° to 450°. The temperature of the bread, I need hardly say, is not 400° but much less, appreciably not more than 212°, but it may be a little over, owing to the resisting action of the crust, but at that temperature you know water boils, and therefore the temperature could not be higher. Before I pass on to a description of the scientific phenomena underlying these processes, I will briefly refer to the manufacture of fancy bread. Bakers, of course, differ in their manufacture of fancy bread in the same way as they do with ordinary household bread, but the following will give you an idea of the general method. In the first place a "ferment" is prepared as before, that is to say, boiled potato with a small quantity of flour, and with brewer's yeast. Having prepared the ferment; in the sponge state, the baker uses a large quantity of German yeast, and in this way gets a very rapid fermentation and a large, light, porous bread. In regard to the chemistry of these operations, the fruit, that is to say, the boiled potato, yields ferment food, and thereby, by the action of the yeast on the soluble albuminoids of the flour, gives a rapid formation of maltose and dextrine. In 8 lbs. of potatoes there are only 2 lbs. of starch so manifestly the baker does not use this small quantity for the sake of cheapness. It is because it is one of the largest of all starches, and therefore it is one of the best means of preparing albuminoid and sugar food for the active stimulus of yeast growth. The ferment stage increases the production of these albuminoids and sugars, and the yeast is in this way greatly stimulated; but another object that I ought to mention that the London baker has in making this preparation of the ferment is that he largely increases the amount of yeast. This method of feeding yeast during this number of hours, is a method of making a considerable amount of yeast out of the one quart that he takes. In the sponge state we have a very active fermentation going on; the sugar there is broken up into carbonic acid and alcohol, and there is a rapid action; and it is in this particular stage which lasts so many hours that inferior flours turn out so badly, because they produce more and more soluble albuminoids, and those give a high color to the final product. In the dough state, which is practically the inert stage, because in the dough stage we have added all the flour, and only 30 more quarts of water; we have also a less period of time allowed, only one hour, and the result is that very little further change goes on. If the flour has withstood the sponge stage without injurious result, it will perfectly well stand the dough stage. The objects aimed by the baker being to obtain good aëration, numerous small cavities of gas, in other words to give a well-piled loaf, also to avoid color, because color always gives rise to a suspicion of inferiority of the flour; and lastly, the baker's aim is to obtain a nice aroma, a fine nutty taste, such as indeed cannot be got by any other method than that which I have been describing.

Fermentation is a subject that has been a source of considerable interest and speculation. I need not, however, do more than simply call your attention to our present knowledge on the subject, for which we are mainly indebted to Pasteur, in that it was he who first of all pointed out most clearly that it was due to minute organisms that fermentation was brought about. M. Pasteur proved that by withdrawing the internal contents of the grape that those contents would not spontaneously ferment, but that if you took a little cotton wool, and rubbed the outside of the skin and added that to that which was withdrawn, the fermentation was set up. We are all now of the same mind that fermentation is brought about by the action of living organisms, saccharomyces. The fermentation of the must of grape, which is brought about spontaneously, is not the only instance of spontaneous fermentation. Leaven bread, which I have spoken of, originally arises in this way, and is to some extent the result of spontaneous fermentation. The production of the old sour beers of Dorsetshire, the production of Lambick, or Faro, is of the same nature. Only the other day I had occasion in this exhibition to taste a sample of Lambick beer, which is made by taking the wort of malt and leaving it to receive whatever dust falls into the large vat, and in the course of one or two years the product, which they call Lambick or Faro, is obtained, which is excessively sour, because all kinds of ferments have brought about the change, not merely the alcoholic ferment. The yeast organism is one of considerable interest and I have a diagram of the indications of the English country yeast, and Burton yeast, and there is also a drawing to represent the acetic acid organism, the lactic organism, and the organism which produces butyric acid, and also the organism which produces the ropy fermentation, the manite and gum, instead of alcohol and carbonic acid. The yeast organism under a good microscope will be found to have a cell wall. You will find inside a space such as I have indicated, which is termed vacuole, is not really a vacuous space, but is filled up with a very thin protoplasm, or, as Professor Huxley calls it, the physical basis of life. The other portion is also filled up with protoplasm. Yeast contains a little granulated protoplasm. When it has been kept a long time it gets exhausted, and part of the albuminoid compounds or protoplasmic matter gets converted into other bodies, and they ooze out, and the result is that in looking through a microscope at the organism, instead of having to look at a well-filled cell, we have a thinner cell to look through, and the result is that the granulated protoplasm is seen much more distinctly. I have, therefore, given a rough representation of old yeast, or yeast that is exhausted. The conditions necessary for active yeast growth are that we should supply broken-down albuminoids and peptones for its nourishment, a certain quantity of phosphate of potash, lime magnesia, together with a little air.

The microscope not only is of value in examining different kinds of flour for the purpose of seeing what mixture of other cereals have been added besides wheat, but it is also of the highest importance to the baker in judging of his yeast, because he will be able to see whether he has the organism which will produce acetic acid which would make vinegar or lactic acid, which would produce sourness, or even a worse organism still.

The particular process I have been describing for making bread, then, depends on making carbonic acid gas from the decomposition of the sugar which has formed in the previous stages yielding carbonic acid gas and alcohol. I have said very little about alcohol; it is with the carbonic acid that we are chiefly concerned. There are other methods, however, of aërating bread without the carbonic acid of fermentation; bicarbonate of soda and hydrochloric acid, when added in proper quantities, so that one exactly neutralizes the other, or at least so that the bicarbonate is slightly in excess, is another method of making carbonic acid; or there is Dr. Dauglish's plan for making aërated bread, which depends upon aërating the bread with carbonic acid made in chemical ways, not by making use of the yeast organism. The hydrochloric acid and bicarbonate of soda has very grave objections, because it requires very great care in mixing them so that you should not have too much bicarbonate on the one hand, or too much hydrochloric acid, or spirits of salts as it is called, on the other. Dr. Dauglish's method has its merits, because you do not introduce anything into the bread like hydrochloric acid or bicarbonate of soda; it is merely carbonic acid that is introduced, and it has for some years been used in London, and one or two other towns. For a long time apparently it had no very great measure of success. It is very interesting, because this method is an entirely mechanical one, and it gets rid of many of the objections which have been brought to the fermentation plan and to the hand method of kneading. I understand that during the last two or three years a greater sale has been found for aërated bread, which shows that the objections which I have for it have not been entertained by those who like it. I find that aërated bread is very nice the first few times of eating it, but after a time I long again for the nutty flavor of the well-fermented bread.

High-class flours and a skillful baker will make good bread. The real difficulty is to make good bread with flours that are not derived from elaborated wheats, and this is a point that I wish to say a few words about before concluding. The Council, of course, desire the greatest extension of knowledge throughout the country, and inasmuch as we only grow one-third of the wheat we eat, and are always obliged to import two-thirds, it seems to me that in seasons that are not very favorable we have a remedy in our hands. In other words, as I have pointed out to you, where it is that so much injury takes place is in the sponge stage. It seems that we should divide our flours. Every miller should send out two distinct flours. A few years ago I recommended that, and there are many millers who do that now, and many bakers who use two distinct flours; but I wish the recommendation I made at the Society of Arts should by means of the cheap publications of this Exhibition be more generally known. In order to show you that this is a very feasible plan, I have asked Messrs. Hill of Bishopsgate Street, to make me an experiment to illustrate it. I preferred not to have anything to do with it myself, in order that it should not be a lecture experiment in which one is liable to exaggerate. I asked Messrs. Hill through Mr. Dunham to get some good American flour and some soft Norfolk flour—not bad flour only rather weak. Then I asked them to have them in the proportion of one-quarter American to three-quarters Norfolk. One set of loaves has been made in which the American flour has been kept separate, and only used for the sponge state, whilst in the other experiment the American and Norfolk flours were mixed and used both for the sponge and for the dough. Loaves were made at precisely the same time, the same flours, the same quantity, the same salt, and baked at the same temperature, and *here* is the result. Those who are interested in the matter will see that in the case where they were mixed the loaf has not risen well, and in addition to that it is not so good in color.

With reference to the use of brown meal, or whole meal, I would suggest either that you make your sponge of very fine sponge flour, as a baker would term it, good hard whites, and then in the dough stage mix up the whole meal into it, or if there is an objection to this that it is diluting your whole meal; then I would suggest another matter of getting over the difficulty. Make first of all a ferment, and in the ferment take care that you use potato and flour as I have indicated; then add in the second stage a small quantity of glucose, using however in the sponge nearly all the salt, and using a large quantity of yeast, pushing on therefore the sponge stage rapidly; then mixing up the remainder of the whole meal, and rapidly making your bread and baking it.

I did intend to call your attention to some drawings of the Vienna oven, to show how foreign rolls are glazed, but I will not detain you any longer. I will only ask you when you have the opportunity at the Exhibition to go round to the east corridor to Mr. Hill's exhibit, and there are one or two others, who are also making these foreign breads, and you will there see the process of glazing these rolls. It is done by steam, which is what we term super-heated. It is forced into the oven which is at a temperature of at least 500 degrees, and the steam coming against the hot walls of the oven becomes super-heated, it then passes over the surface of the roll, and glazes it or covers it with dextrine. I will only detain you with two or three other remarks. In the baking the cells of the starch are burst, which renders the bread easily digestible, the carbonic acid gas bubbles are enlarged, and that together with the expansion due to the steam enables the bread to be well piled. The crust keeps the moisture in, and from the elaborate experiments made by Lawes and Gilbert, Dr. McLagan, and our distinguished chairman many years ago, we now know the exact percentage of moisture, that may be found in ordinary quartern loaves. To put it in another way, 100 lbs. of flour will give about 135 or 136 lbs. of bread; in other words, a sack of flour will give 96 loaves. I dare say one or two practical bakers would say that fine flour would give even more.

I have called attention to the chemical phenomena underlying a very important industry; I have asked your attention to this experiment made for me by Messrs. Hills, and I will also ask you to notice the exhibit of Mr. Bonthron, No. 179, in the main corridor, to see the character of his crude gluten. I have some on the table, some dry, and some mixed with water, and I would ask you to notice the excessive tenacity of this gluten. If I have contributed anything to show how wheats that have not been well elaborated may yet be used with our foreign importations; if I have in any way, not merely to this audience but to the still larger audience I hope to address by means of the Exhibition publications; if I have called your attention and that of others to interesting exhibits, which you will find all through the building connected with bread and corn; and if I have shown you the importance of science to the advancement of this technical art, and caused you to take an interest in the scientific phenomena on which it is based, I shall not have failed in the object with which I came here to-day.

The chairman in moving a vote of thanks to Professor Graham for his exceedingly interesting, scientific and practical lecture, remarked that if none but the best qualities of wholesome food were used, the prices would evidently rise to such an extent as to seriously interfere with the supply; but science was able to teach how to employ inferior qualities of that which was nevertheless essentially wholesome, so as to succeed in producing the result which, if not quite the best, was at any rate of a highly satisfactory character, and all must feel that Professor Graham's efforts towards the elucidation of that problem in the case of the conversion of flour into bread, were worthy of the most hearty vote of thanks which could be accorded to him.

Mr. Bonthron, as a practical baker of forty years' experience, begged to second the vote of thanks. He was very pleased to find science following so closely on the heels of observation and experience. He saw several practical bakers present, and he would call their attention to the very important consideration arising out of what they had heard, viz.: the importance of the time to be given in London sponge to first-class flour, in order that the proper change might take place. This was a matter he had a great deal of difficulty in impressing on his workmen, but there was no doubt that the fine flour required longer time to undergo the necessary changes, and it must not be supposed for a moment that it could be done hurriedly. You could not ripen a grape properly except by the natural sun and by the natural time, and the same thing applied to bread making. He had been much struck with the diagram of the ferments. It was well known that heat accelerated and cold retarded fermentation. In this particular season of the year yeast must be in a condition in which it was necessary that every care should be taken to nourish it. There was a serious danger of putting yeast which was weakened by warm weather into too cold a ferment. It should be tenderly nourished, always put in with a good body of food for it to work upon, never into the water, but always after the flour and other matters were put in.

STORY OF A CHIP.

An interesting story is told in connection with the old state prison at Charleston, which shows how small and insignificant a thing may give liberty to a prisoner. A convict had been sent to imprisonment for fifteen years for committing a series of burglaries, and had served between three and four years, when one day he brought a small chip of wood from the shop where he was engaged in labor to his cell. This fact was not worthy of notice at the moment.

When, however, the prisoner with others had been marched to their cells, he placed the chip in such a way as to prevent the bolt of the door of his cell from fastening. The officers on duty made their usual inspection saw each man in his cell, and so reported.

After the inspection had been made the convict in question opened his cell door, closed it again, and passed quietly out of a side door into the yard. In a moment he had gained the shop where he worked. Here he put on a pair of overalls belonging to one of the instructors, and from there he got upon the prison wall, and entering one of the guard-houses he found an overcoat which he donned. He was now ready to bid adieu to the prison. His movements were in no way slow; for he knew that at any moment his absence might be noticed, and the officers be upon his track. Leaping from the wall the convict was soon in the street and off "for parts unknown."

At 1 o'clock, when the prisoners were to return to the shop for afternoon, the absence of the escaped man was noticed, and although diligent search was made and the usual reward offered for his arrest the fellow was never captured, but made his way to Halifax, where to-day he is engaged in a legitimate business. —*Boston Globe.*

RYE AS A FARM CROP.

During several years rye has not been a favorite crop in this country. Our native population prefer a strictly white bread, which can not be made from rye. Indian corn has taken its place as a food for fattening animals. It has also been generally used for feeding the hogs. In colonial days as well as for some time after the Revolution, rye was commonly employed for making alcohol and whisky. As the west became settled corn took the place of rye for making these articles. In the new England states, where "Boston brown bread" is extensively used on tables, rye meal was formerly employed for mixing with corn meal. During the past few years, however, wheat middlings have commonly taken its place. In quality they are greatly inferior to rye meal, but their cheapness causes them to be used. The Germans and Scandinavians who come to this country continue to eat rye bread in preference to that made from wheat flour. This practice is obviously the result of early experience, and may not continue beyond the present generation. At present, however, the preference of the people from central and northern Europe for rye bread is strong. A few years ago they continued to buy rye flour although it was considerably higher than the best wheat flour. That rye bread is in some respects superior to that made from wheat flour is obvious. It has an agreeable sweet flavor that wheat bread does not have, and also retains moisture longer after it comes from the oven. Still the prospect that rye will ever take the place it holds as a material for making bread in central and northern Europe is very poor. Neither is it likely that rye will be extensively used as food for the inferior animals or in the in the manufacture of alcoholic drinks.

While it is improbable that rye will ever be a popular crop with "bonanza farmers," there are good reasons for believing that its production will prove profitable to many who cultivate land on a somewhat small scale. Considerable rye can be used by the general farmer to excellent advantage. Some rye is desirable for food for human beings, if for no other purpose than to afford variety. It is an excellent food for fowls of all kinds. Rye is very beneficial to horses when fed in limited quantities. It furnishes excellent food for young animals of all kinds. Hogs will thrive on rye in all stages of their growth. All who have had experience in carp culture recommend rye in preference to all other grains for feeding these fish. Rye can be raised in locations and on soils where fair crops of wheat can only be produced by the expenditure of much labor and the application of liberal amounts of valuable fertilizers. It is the best crop for lands that are very sandy and deficient in the elements of fertility. It is not an exhaustive crop like wheat or flax. The plants are more hardy than those of wheat, and the grain is not as subject to injury as barley. But a small amount of seed is required. It yields more than wheat, and is produced at a smaller cost. It is less likely to be injured by insects. Growing rye furnishes excellent winter and spring pasturage. It is also an cellent material for soiling. It is ready to cut several weeks before clover and early grasses are. Next to red clover it is the best crop to plow under for the purpose of enriching the soil. Rye produces more straw than wheat or barley, and it is much more valuable. Besides being useful for feeds, it is valuable for making thatch, packing goods, tying up grape vines, and filling beds. In the matter of general utility there are few crops that will compare with rye.

POPULAR MISCONCEPTIONS THAT OUGHT TO BE OVERTHROWN.

A writer in *Lippincott's Magazine* thinks that the health of the people would be brought up to a better condition if they were educated out of the following fallacies:

The idea that cold baths are healthy in winter and dangerous in summer.

That rain water is more wholesome than "hard" water.

That bed-rooms must be heated in cold weather.

That the misery of everlasting scrubbing and soap-suds vapors is compensated by the comfort of the lucid intervals.

That a sick-room must be kept hermetically closed.

That it pays to save foul air for the sake of its warmth.

That "draughts" are morbific agencies.

That catarrhs are due to low temperature.

That even in midsummer, children must be sent to bed at sunset, when the air begins to be pleasant.

That an after dinner nap can do any harm.

That the sanitary conditions of the air can be improved by the odor of carbolic acid.

That there is any benefit in swallowing jugfuls of nauseous sulphur water.

That rest after dinner can be shortened with impunity.

That out-door recreation is a waste of time.

That athletic sports brutalize the character.

That a normal human being requires any other stimulant than exercise and fresh air.

That any plan of study can justify the custom of stinting children in sleep.

That the torpor of narcotism is preferable to insomnia.

That the suppression of harmless recreation will fail to beget vice and hypocrisy.

That stimulation is identical with invigoration.

That fashion has a right to enforce the wearing of woolen clothes in dog days.

FARMERS AND THE ELEVATORS.

Farmers all through the Northwest are bitterly complaining of the alleged exactions of the elevator owners, the railroads and the millers. In the minds of the farmers, these three are leagued together in Minnesota and Dakota to oppress the farmer in every possible way. It would certainly seem that the millers of the neighborhood could not have a common interest with the grain men, who would be their competitors for the grain. And in fact most of the complaints made by the farmers are found, when sifted, to have only a small foundation for the superstructure of abuse which they build against the elevator men and the railroads. All elevator men and elevator agents may not have been exactly just in all cases, but the great complaint of undergrading is due to the fact that the elevator man must protect himself against the possibility of his grain being graded down at Minneapolis or Duluth. Farmers certainly have not a reputation for long-suffering. Few of them recognize the possibility of his own wheat, raised by the sweat of his brow, being dirty, or damp or smutty. Each farmer's wheat is just as good as his neighbor's wheat. Most frequently the farmer is blind to differences in quality, and with him wheat is wheat. The grain man or miller who is obliged to get value out of it, may often be hypercritical, but he certainly is a better judge of grades.—*Am. Elevator.*

CAPACITY OF MINNEAPOLIS MILLS AND ELEVATORS.

[From the Northwestern Miller.]

The milling capacity of Minneapolis has shown a large increase during the past year, and at present stands as follows:

WEST SIDE.

NAME OF MILL.	OPERATED BY	1884. BARRELS.
Anchor	C. A. Pillsbury & Co	1,200
Cataract	D. R. Barber & Son	550
Columbia	Columbia Mill Co.	1,200
Crown Roller	Christian Bro. & Co.	1,900
Dakota	H. F. Brown & Co.	310
Excelsior	D. Morrison	1,200
Galaxy	Cahill, Fletcher & Co	1,000
Holly	F. S. Hinkle	275
Humboldt	Hinkle, Greenleaf & Co	800
Minneapolis	Crocker, Fisk & Co	800
National	Citizens' Bank	150
Northwestern	Sidle, Fletcher, Holmes & Co.	1,500
Palisade	Washburn Mill Co.	1,500
Pettit	J. A. Christian & Co.	1,300
St. Anthony	Morse & Sammis	500
Standard	D. Morrison & Co.	1,500
Union	Morse & Sammis	300
Washburn A.	Washburn, Crosby & Co.	3,500
Washburn B.	Washburn, Crosby & Co.	1,000
Washburn C.	Washburn, Crosby & Co.	2,000
Zenith	Sidle, Fletcher, Holmes & Co.	800

EAST SIDE.

Pillsbury A	C. A. Pillsbury & Co	6,200
Phœnix	Stamwitz & Schober	275
Total daily capacity		29,760

Our storage capacity has been materially added to during the past year, but is yet inadequate. The need of more storage room, however, does not seem likely to go long without being met, as there are several schemes now in the embryo state that are designed to make ample provision for the present deficiency. The appended table gives the names of Minneapolis public elevators and their capacities:

ELEVATOR	OPERATED BY	CAPACITY. BUSHELS.
A1	Minneapolis Elevator Co.	800,000
A2	" " "	1,250,000
B	Milwaukee & St. Paul R. R.	900,000
C	H. W. Pratt & Co.	140,000
D	Milwaukee & St. Paul R. R.	200,000
Central	G. W. Van Dusen & Co.	300,000
Pillsbury	C. A. Pillsbury & Co	425,000
Lowry	Street Railway Co.	130,000
Baker-Potter*	Baker, Potter & Co.	600,000
Transfer†	Northwestern Elevator Co.	535,000
Total		5,280,000

*Just completed, but not yet in use.
†Located between Minneapolis and St. Paul.

The following is the storage capacity of the mills:

	BUSHELS.
Anchor	7,500
Columbia	70,000
Crown Roller	75,000
Cataract	28,000
Dakota	2,000
Excelsior	7,000
Galaxy	60,000
Holly	2,500
Humboldt	25,000
Minneapolis	19,000
Northwestern	35,000
Palisade	20,000
Phœnix	20,000
Pillsbury A	126,000
Pettit	14,000
St. Anthony	8,000
Standard	30,000
Union	4,000
Washburn A	110,000
" B	65,000
" C	65,000
Zenith	20,000
Total	823,000

The only change that has lately occurred in the storage capacity of the mills has been in the case of the Pillsbury A. A hundred thousand bus. elevator has been built adjoining for that mill, making a valuable addition to that complete establishment, and without which it before had comparatively no storage.

RECAPITULATION.

	BUSHELS.
Public elevator storage	5,280,000
Storage in mills	823,000
Total storage capacity	6,103,000

PLEASANT PARAGRAPHS.

A GEORGIA PLANTATION SONG.—The Oglethorpe *Echo* says that at a negro church in the lower part of the county, the following was sung as a hymn not long since:

June bug got de golden wing,
Lightnin' bug de flame,
Bed bug got no wing at all,
But he git dar all de same.
CHORUS—Nigger baby bow legged,
Nigger baby bow legged,
Nigger baby bow legged,
Kase he walk too soon.

HE CLEARED UP EVERYTHING.—What business were you engaged in when in the United States?" one foreign tourist asked another.

"I was a bank cashier," replied the traveler.

"Not one of those with a discrepancy, I hope," facetiously remarked the tourist.

"Oh, no. There was no discrepancy. I cleared up everything before I left. The safe remains. It is a part of the building, you know."

"BILL, does you see dat nigger coming down de hill yonder?"

Bill replied: "Indeed I does."

"Well," said the other, "dat's a mighty smart nigger, he is."

"He's been a justice of de peace."

"Must be a smart nigger," replied Bill.

"Yes; he's bin in de Legislater."

"Must be a smart nigger," chimed in Bill.

"Yes; he's been in de Congress."

"Mighty smart nigger," said Bill, who, by the way was a great church nigger.

"Why, dat nigger is de smartest man in de world."

"Oh, no," said Bill, "Jesus Christ de smartest man in de world."

"But, hold on," fairly shouted the other; "dat nigger is a *young nigger yit*—heep o' swell in him."

EULALIA (sentimentally)—"Oh, no! I have no desire for great wealth. I should be happy, very happy, as the wife of a noble bread-winner."

George (practically): "And I should be happy, very happy as the husband of a good bread-maker."

"She concluded to learn.—*Call.*

SELLING GOODS BY SAMPLE.—Mr. Joseph Mulhattan ex-Presidential candidate, is a Louisville hardware drummer. Recently he was engaged in selling a bill of goods to an old Dutchman in the South.

"You charge seven dollar and a half a dozen for dot knife? asked the Dutchman in some surprise.

"Yes, $7.50 a dozen. Razor steel, crocus ground, brass lined, stag handle, Sheffield make, ——

"But a Zinzinnati drummer, only last veek offered me dot same goods already for six dollars."

"See here, my friend," said Mr. Mulhattan, "you sell your goods at just double what they cost, don't you?"

"Ya, if I buys a thing for one dollar, I sell him for two dollar; dot's shust one per cent."

"Yes. Well, that Cincinnati drummer charges you $6 for these goods, and you sell them at $12, and make a profit of $6. I offer them at $7.50, and you get $15, or a profit of $7.50. Just a dollar and a half more, isn't it."

"Vell, yes," said the old Dutchman, scratching his head. I guess maybe dot was so."

"All right. You just take my advice, then, and never buy anything of a Cincinnati drummer if you don't want to get swindled."

And yet Mulhattan was hopelessly defeated!

TOO HONEST TO LIVE.—An iceman and a milkman drove up to the door at the same time.

"How many pounds of ice do you leave here every morning?" asked the milkman.

"My contract calls for ten pounds, but I leave twenty for good measure. How many quarts of milk do you leave?"

"I don't leave any. They think they are getting two quarts of milk every day, but it's all pure cream."

Just then a large truck came bowling down the street. It ran over and instantly killed both the iceman and the milkman. Their last words were:

"We'll see each other in heaven."

IN A HOPELESS MINORITY.—Several years ago a prominent physician of this county was called to the bedside of a gentleman in Jackson county, sick with fever. A revival meeting was in progress in the neighborhood of the sick man, and the doctor c ncluded he would attend after administering the physic. He was late on his arrival at the church and had to take a front seat. The preacher preached a rattling good sermon and had the people considerably wrought up. As he closed he stated that he wanted every person in that house who wanted to go to heaven to rise. All stood up except the doctor. "All have risen but one man," said the man of God. "I will put the reverse of the proposition. All who want to go to hell will please rise." The doctor arose, looked around, and as he saw no one standing except himself and the minister, he exclaimed: "Be Gad! parson, we are in a hopeless minority." This convulsed the whole house, and virtually broke up the revival, as none ever went to the mourners' seat afterwards.—*Macon (Ga.) Telegraph.*

A BEWILDERED LORD.—During the journey north, Lord Salisbury, the conservative leader in the House of Lords, changed his costume for a full Highland rig-out, intending it as a delicate compliment to the land of of the kilt. But when he looked at himself in the glass he found that the tailor had cut his petticoats, or whatever they are called, too short. So he made up his mind to put on evening dress. He changed his upper garments and then sat down for a few moments to read up his speech. This sent him to sleep. He only woke with a start to find himself running into the station. Forgetting what had happened he thrust on his hat and appeared at the window bowing, and this was how he was dressed: He had full Highland costume as far as his waist, above was a white shirt and swallow-tailed coat, and the entire edifice was crowned by a chimney-pot hat, upon which he had sat down without noticing it. His lordship's horror when he stepped on the platform and felt the keen wind cutting his bare legs chang d into absolute a ony wh n his valet appeared scrambling out of the carriage with a pair of trousers in his hands, waving them wildly and exclaiming: "My lord you've forgotten these!"—*Referee.*

EXPECTORATION EXPECTED.—Pat. was a fresh arrival, and had obtained a situation in a hotel as a sort of man of all work.

"Now, Pat.," said the landlord, "you see that sign, 'Gentlemen must use the spittoons.' If you notice any guests violating that rule, I want you to report the matter to me."

"Oi wull, sor."

Pat. kept a sharp eye out, and after watching a gentleman for half an hour, he went to him and said:

"Dy're moind the sign forninst the wall, sor?"

"Yes."

"Phy don't ye obsarve it, thin?"

"I am not spitting on the carpet," said the gentleman, rather astonished.

"I knaw yer not, and yer not usin' the spittune nather. Spet, ye thafe, or oi'll report yez."—*Ararat Eagle.*

TIED TOO SOON.—There is a boy in St. Paul that should be killed. Last Sunday evening he crawled under the sofa, and when his big sister and her best young man were sitting as close together as possible, rigged a slip-knot around their feet. When the old gentleman came into the parlor to look for his cigar-stub they thought they would occupy separate pews. The young man fell over the centre-table, and Mary Ann sat down upon the floor with a 200 to the square inch concussion that dislocated her adjustable bangs. The old gent. thought Adolphus was drunk, and hit him with his cane sixteen times before he could tie himself loose and fall out of the window. The match is declared off.

AN EXTRAVAGANT YOUTH.—Thirty thousand dollars a year would be considered a fairly liberal allowance, even by the most exigent of school-boys. But the guardian of the Marquis of Camden, aged 12, thinks the amount insufficient, and wants it raised to $40,000. The judge of probate before whom the application came refused to grant it. He intimated that as the total income of the youthful marquis did not exceed $50,000 a year it would be better at present for him to get along by exercising strict economy with the $30,000, adding that hope might be cherished of an increase of the allowance when his lordship should be sent to Eton or to a university.

A FARMER was sawing wood, when it occurred to him that he ought to have the help of one or more of his five boys. Lifting up his voice he called, but not a boy appeared. At dinner, of course, all appeared, and it was not necessary to call them.

"Where were you all about two hours ago when I wanted you and shouted for you?"

"I was in the shop settin' the saw," said one.

"And I was in the barn settin' a hen," said the second.

"I was in gran'ma's room settin' the clock," said the third.

"I was in the garret settin' the trap," said the fourth.

"You are a remarkable set," remarked the farmer. "And where were you?" he continued, turning to the youngest.

"I was on the doorstep settin' still."

Providence News.

1876--NINTH YEAR OF PUBLICATION--1884.

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N. B.—We shall be pleased to have millers in all sections of the country write us giving items of news, description of new mills, milling processes, etc.

THE GRAIN AND MILLING TRADE.

Present Condition and Prospects for the Future.

What the Leading Firms have to say on the Subject.

Desiring to give our readers some idea of the present state of the milling and grain business and the outlook for the future, we addressed the following letter to millers, grain-dealers, mill builders and mill furnishers in all sections of the country:

OFFICE OF THE UNITED STATES MILLER,
MILWAUKEE, Wis., Dec. 8, 1884.

Gentlemen—Will you kindly write us, stating the present condition of the grain and milling business in your state and the prospects for the year. Is grain coming freely to the market? What is considered a fair price for milling wheat now? Are wages less now than in January 1884? Have many new mills been built or old mills remodeled during the past year and what are the prospects in that line for the year 1885? Any other information of value to the trade will be gratefully received and published. Trusting that you will oblige our readers and ourselves by an early and full reply, we are

Yours truly,
UNITED STATES MILLER.

To this we have received the replies published below, a careful perusal and consideration of which will certainly repay our readers.

[From C. A. Pillsbury & Co., Minneapolis, Minn.]

MINNEAPOLIS, Minn., Dec. 10, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—Yours of the 8th received. The flour business is not very good. Prices are very low and declining at present, though the opinion is that bottom has been reached. Wheat is coming in very freely. Wages are about the same as in January 1884. No new mills have been built here during the past year and none have been remodeled.

Yours truly,
CHAS. A. PILLSBURY & Co.

[From the Pray Manufacturing Co.]

MINNEAPOLIS, Minn., Dec. 11, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—Yours of the 8th received, and in answer will say our mills are running full time and producing more flour than ever before, although they are said to be manufacturing on small margins. The farmers are selling wheat very freely, at least 60 per cent. of the crop is now marketed. Wheat is now selling at 70 cents, and this seems to be the ruling price at present. Wages are 10 per cent. lower than a year ago. There have been quite a number of small country mills built this season and prospects for 1885 are about the same as they were for 1884. No large mills in prospect. We are of the opinion that 1885 will see business a trifle better than it has been for the past two years. We do not anticipate any booming for at least eighteen months, but think that trade will gradually improve

Yours truly,
PRAY MF'G. CO.,
O. P. BRIGGS, Sec'y.

[From Ferdinand Schumacher.]

AKRON, Ohio, Dec. 10, 1884.
Editor United States Miller, Milwaukee, Wis.:

Dear Sir —Milling has been very brisk up to this time and promises to continue as well as usual. Wheat is not sold very freely. Ohio crop is of superior quality, weighing 62 pounds, and sells at our mills at 80 cents per bushel. Common labor is plenty at $1.25 per day. The Seiberling Milling Co. started an 800 bbl. flouring mill in the spring, and the Akron Milling Co. is about to complete an extensive mill for flouring, oatmeal and cornmeal. Do not know of any new mills to be built this year. The growing crop looks splendid. Think there is full as much sown as last year.

Yours truly,
FERD. SCHUMACHER.

[From the Shelby Milling Co.]

SHELBY, Ohio, Dec. 11, 1884.
Editor United States Miller:

Grain is not coming in very freely. Milling wheat is worth 75 cents per bushel now. Wages less than in January 1884. No new mills built and do not hear of anyone contemplating building in this vicinity in 1885. Think prospects fair for next year for millers doing close and first-class work. Margins will probably be close, but "the fittest will survive."

[From F. N. Quale, Prop. of Central Elevator and Armada Mills.]

TOLEDO, Ohio, Dec. 10, 1884.
Editor United States Miller:

Yours of the 8th before me, and in answer to your inquiries would say: In my opinion, the grain is all right, but there is too much mill machinery to supply the wants of trade. Plenty of grain coming forward; price 74 cents for soft, hard worth 67 cents. Not much difference in wages, but lower, if anything. One mill has been remodeled. Prospects not flattering.

Truly yours,
F. N. QUALE.

[From The Stilwell & Bierce Manufacturing Co.]

DAYTON, Ohio, Dec. 10, 1884.
Editor United States Miller, Milwaukee, Wis.:

Gents:—In accordance with your request, we give you the following items. We do not keep ourselves posted as to the price of wheat, but it seems to be coming into our market very freely. In regard to wages, we are paying the same we did a year ago. Very few new mills have been built in this section, but we have been kept busy changing over old mills to the roller system. Since the election, business has been very dull, and there seems to be a disposition to wait and see what the policy of the incoming administration is to be. If that administration is conservative in its policy, we think the indications are favorable for a fair degree of business in 1885. It may also be interesting to know that the "Odell" rolls have come to the front and are daily growing in favor. We do not advertise our sales, as is the custom of other houses in our line, but we believe it to be a fact we have done more business during the past year than any other house in our line.

Yours truly,
STILWELL & BIERCE MF'G. CO.

[From M. G. & N. Sage, Elkhart, Ind.]

Growing crop excellent. Small profits in milling. Grain selling moderately free, price, 70 cents. Wages, same. No new mills built, but many remodeled during past year. All will be remodeled another year that can raise the stamps, but few remaining to remodel.

M. G. & N. SAGE.

[From the Melrose Milling Co.]

EVANSVILLE, Ind., Dec. 10, 1884.
United States Miller, Milwaukee, Wis.:

In answer to yours of 8th, would say that the grain and milling business in this section is in a languishing condition, and we can see nothing encouraging for the future. The mills in this city are running about half-time, and paying 70 cents for No. 2 winter wheat. Wages about the same as in January '84. But one new mill built this year, that of Messrs. Brose & Arnold. Do not know of anybody contemplating remodeling their mills.

Yours truly,
MELROSE MILLING CO.
L. T. I.

MADISON, Ind., Dec. 10, 1884.
United States Miller, Milwaukee, Wis.:

Gents:—Replying to yours of 8th inst: The grain and milling business in our State is very dull and the outlook anything but bright. Very little wheat offering in our section, but prices in buyers' favor. Millers all complaining of *no margin* on flour; 73 cents fair price for milling wheat. Wages about 10 per cent. lower than January '84. Two mills in our section have been remodeled and adopted full roller system. We are only running half-time to supply regular trade.

Truly yours,
W. TROW & Co.

[From F. S. Johnson & Co., Prop. of Quenchaqua Mills.]

MILFORD, Neb., Dec. 10, 1884.
The United States Miller, Milwaukee, Wis.:

Gents:—Referring to your letter of 8th inst., concerning present condition and future prospects of the grain and milling business of this section:

Trade in both lines is now depressed. The extremely low prices for poth wheat and corn now ruling have had a tendency to check deliveries. Most producers now seem to consider the chances for a material increase in price as poor, and as a result are beginning to market their grain more freely. We are now paying 49 and 50 cents per bushel for good milling wheat. Shippers pay from two to three cents less.

Wages remain about the same as in January, 1884, but we look for a reduction. Two new mills have been built in this section during the past year, or more correctly, one built and one remodeled.

Of course, we can make a "guess in the dark" at the prospects for next year. Our opinion is that we shall have a chance to make a showing of American "grit" for a short time, and that the clouds will gradually clear away. We look for good, active trade during the spring and summer of 1885. We remain,

Very truly yours,
F. S. JOHNSON & Co.

[From the Topeka Mill & Elevator Company.]

TOPEKA, Kas., Dec. 10, 1884.
United States Miller, Milwaukee, Wis.:

In answer to your letter of the 8th, as to the condition of trade, crops and future prospects in this section: To obey the order of Mr. Cleveland to "tell the truth," we will be compelled to say that the milling trade is dull; orders are light, and there is a general demand for lower prices. We believe that a better trade and better prices will come with the spring time; wheat is in light demand and large offering. The average price in the State for good No. 2 milling wheat is about 50 cents. The mills are paying the same wages they did in January '84 The wages have been materially reduced for all other kinds of labor During the year there have been built a number of new mills, some of them of large capacity, and many of the old mills have been remodeled and capacity increased. With the new mills and the changes made in the old ones the milling capacity of the State has been nearly doubled. Unless there is a very material change for the better in the trade there will not be many new mills built during the year of 1885.

Winter wheat never looked better at this time of the year than it does now. There is some talk among the farmers about bugs. How much the wheat will be damaged by them cannot now be estimated.

Truly yours,
P. G. NOEL.

[From W. C. Smith, Prop. Broadway Mills.]

LOUISVILLE, Ky., Dec. 10, 1884.

Milling has been fair till now, somewhat dull, sharp work on close margin balance of year. Grain offered freely for weeks. Pay 75 cents per bushel for red. Wages unchanged. Several new mills built, and many old ones altered. Don't know about '85.

Respectfully yours,
W. C. SMITH.

[From the Fox River Flour and Paper Co.]

APPLETON, Wis., Dec. 11, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—In reply to yours of the 8th, would say: The milling business is poor; can't see any prospects for it being better. Grain is coming in very freely; price paid, 63 to 70 cents. We are paying same wages as have been paid during the year, but a very few mills have been built in our section; none rebuilt. See nothing to encourage the milling industries in our section. We have been the only firm that I know of that have kept their mills running on full time. Are all speculating in our own minds what course the new administration will take. What is your opinion?

Yours truly,
S. K. WAMBOLD,
Gen. Manager and Treas.

[From Colton Bros.]

BELLEFONTAINE, Ohio, Dec. 11, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—In reply to your inquiries of 8th: The milling business is called dull in this part of the State; individually, we are running to full capacity 24 hours per day. Wheat is being bought at 70 to 72 cents per bushel, and is of excellent quality. Farmers are slow to sell at the price, but many are compelled to market their grain. Wages are about same as a year ago, in our business, but many manufacturing establishments have reduced wages. One new mill has been built in the county the past summer, 75 bbls. capacity, not yet running, at East Liberty. No other mills being built or changed, but plenty of old ones for sale at 25 to 50 cents on the dollar. Growing wheat looking excellent and full average crop sown.

Yours, Etc.,
COLTON BROS.

[From Victor Mills.]

SHELBYVILLE, Ten., Dec. 10, 1884.
United States Miller, Milwaukee, Wis.:

Yours of the 8th to hand: Grain and Milling business dull; orders few. Plenty of grain on market; 70 cents outside price for strictly fancy wheat from dealers, 65 cents from farmers. Paying same wages as in January 1884. No building of mills, and little remodeling, this year, and prospects slim for next on account of unsatisfactory business this year.

Yours respectfully,
VICTOR MILLS.

[From Eagle Mill Co.]

PARKERSBURG, W. Va., Dec. 11, 1884.

Gentlemen:—The prospects for milling in this section of the country are very good. The wheat crop was better this year than for ten years before. The corn crop was almost an entire failure. Have to depend on the West for corn. Mills are paying from 75 to 80 cents per bushel for wheat and getting about all they want. There are two new mills being now erected near here, one at St. Mary's, W. Va., and one at Bellville, W. Va. None of the mills have made any changes, except us; we have taken out Buhrs and put in the Odell rolls.

Yours truly,
EAGLE MILL CO.

[From J. P. Felt, Esq.]

EMPORIUM, Pa., Dec. 10, 1884.

This is a lumbering district. No grain of any consequence raised here. No merchant mill, except mine, in a distance of 200 miles east and west and 60 miles north.

Yours, Etc.,
J. C. FELT.

[From Jas. K. Hurin, Esq.]

CINCINNATI, Dec. 11, 1884.
Editors United States Miller, Milwaukee, Wis.:

Dear Sirs:—Yours of the 8th inst. was duly received, and I reply to your interrogatories in the order in which you made them:

Wheat is not moving freely here at present. Good No. 2 is bringing about 74 cents per bushel.

Millers' wages are about the same as a year ago. Men out of work all willing to take places of those in employment and accept smaller wages than they would have been willing to take a year ago. But few mills have been built in this vicinity within this year, and those have been of small capacity.

Some few Mills have been changed over to the roller system. Not so much wheat sown this fall as a year ago. Growing crop looks well.

Yours very truly,
JAMES K. HURIN.
J. H. H.

[From Joseph & Anderson.]

MONTGOMERY, Ala., Dec. 12, 1884.
United States Miller, Milwaukee, Wis.:

Gents:—In reply to yours of 8th: The grain business in our section is very light, and we expect it to continue so for the next six months. Corn and oat crop was very good last season and farmers, with few exceptions, have very near enough grain to run them through. Our crop of corn and oats is only for home consumption, no surplus to ship off. There is no wheat raised in this section. Mills buy their supply from Tennessee, Kentucky and further west. No. 2 winter (St. Louis classification) costs about 85 cents delivered here from Kentucky and Indiana. We have no knowledge of reduction in wages of labor, except our own busines. We have reduced 15 per cent. We don't think there is any other flour mill of over 75 bbls. capacity in the State. There is no other mill in 60 miles of us. We believe this year, as all millers will tell you, has been the hardest we have known for many years. We attribute it to over production and the light export demand. The great trouble is, there are too many mills in this country when there is no exportation of flour. The milling capacity is too great for home wants. Large mills that never before entered this territory are now drumming every "cross-road grocery," saying there export trade has fallen off so much that they are compelled to find new territory, and for the past two months it would take a magnifying glass to see any profit in the business.

Respectfully,
JOSEPH & ANDERSON.

[From the Eufaula Mills.]

EUFAULA MILLS, Ala., Dec. 12, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—Yours of the 8th inst. at hand. We have not been in the market since August 21, of this year, our mill having been burned on that day, and we do not know that we could throw much light on the subject.

From figures we have lately seen there does not seem to be much besides "glory" in the business, but with the new administration there is a general belief that this country will be in better condition for all trades. Wages are everywhere good in this State, and they are exceptional cases where labor has suffered by reduction, on account of the falling values of productions.

Yours respectfully,
EUFAULA MILLS.
R. E. L. MARTIN, Sec'y.

[From Howell & Sons.]

MORRISVILLE, Pa., Dec. 12, 1884.

Dear Sir:—The present condition of the grain and milling business, both in New Jersey and Pennsylvania, is not satisfactory. Good milling wheat is only worth 85 cents, but even at this low price, there is scarcely any margin in flour, over the cost of manufacturing. Business men are hoping for a revival after the close of the present year, but we see very little grounds for encouragement for the near future. Manufacturing of all kinds is very dull, a great many men unemployed. We are running both our mills night and day, but at scarcely any profit. Most mills are running daytime only, and some few have shut down entirely. We know of but one mill built the past year, but quite a large number of old mills have been remodeled to the roller system. We do not think there will be much better improvement the coming year. There has been no change of wages from the past year, and while some disposition exists for lower wages for the coming year, yet do not think there will be any general change. Our greatest difficulty here is an overstocked market; this is especially the case with the fair to low grades. Many mills are unquestionably running at a loss. Stock is shipping into this market to commission houses; the houses cannot sell at the limit given them, consequently stock is held a few weeks, until the miller is compelled to realize, when he orders stock closed out, then it is slaughtered; this, of course, has its influence on the whole markets, and affects the choice patents as well as other grades. We should have been much better pleased to have been able to have given you a more encouraging report, but we know you want the facts, and you have got them.

Respectfully yours,
HOWELL & SONS.

[From the Lone Star Mills.]

DENISON, Tex., Dec. 11, 1884.
United States Miller:

In reply to your inquiries of date 8, 1884: The crop prospect is most excellent, the wheat on the ground showing a good condition. Rains have been just right for the wheat plant, which is necessarily on land in cultivation, and consequently in condition to receive the best benefit from each shower. Rains have been too light and unfrequent for grazing interests. We are receiving very little grain of the '84 crop, as it is, perhaps, nearly all marketed. In this climate grain should be marketed early, as elevator facilities are not sufficient to handle the grain and keep it free from taint and insects. North Texas markets have averaged nearly 70 cents perhaps, for wheat, which is proportionately higher than any market in the world. Present price is 60 to 65 cents for 58 and 60 pound wheat, fairly plump, partially cleaned, and of the Mediterranean and Red May varieties, and the very light amber, called "Walker" wheat. This price is five cents too high for milling.

Wages generally are as good as in last three years, as far as we can observe. One new mill built in this vicinity (Bonham) and a few in the State. A light bill with millfurnishers has been the rule, and but little changing will be done this year ('84 and '85). There is undoubtedly a prosperous field for the flour and milling industry in Texas in the near future. At present the prosperous mills could be told off the fingers of one hand. Texas mills, with a few bright exceptions, are poorly equipped for flat grinding and not equipped for anything else. One-half dozen full roll mills, on good to short systems, are making some headway in competition with low flour rates from Missouri, Southern Illinois and Kansas.

EDESTON.

[From the Nordyke & Marmon Company.]

INDIANAPOLIS, Ind., Dec. 11, 1884.
United States Miller, Milwaukee, Wis.:

Your letter of recent date is before us. The local grain markets are quite firm on account of light arrivals. This firmness has only been noticeable within the past ten days. We have in elevators about 100,000 bushels, being about one-half the supply at this time in '83. There are about 1,500,000 bushels more grain in sight this week than there were this time last week. No. 2 Mediterranean brings 74 cents per bushel; No. 3, 72; No. 2 red, 72. In the corn market buyers are more numerous than sellers. New white corn brings 36 cents, new yellow, 34. The present wheat crop, so far, is doing nicely, but the acreage of 1885 is much reduced, on account of the prevailing low price of wheat.

As for wages of employes, there has been no reduction so far, as we considered it preferable to reduce the force, rather than cut down wages.

We have, during the past year, built or remodeled to the roller system 216 flouring mills, the most noticeable thing being the almost entire absence of mills on the old millstone process. A man inquiring for such an outfit, unless he be on the frontier, is considered a curiosity. Many of the roller mills built by us have been large, but the above number does not include the numerous orders through millwrights and millers who have the job of remodeling themselves, we furnishing the machinery only. This year has also entered the introduction of the new eight-break system of reduction in our large mills, which makes a large increase in the amount of middlings and less proportion of break flour.

The prospects for trade in 1885 indicate a falling off in the number of mills to be built, because of the small margin of profit in present milling, and, on account of the large amount of competition for mill jobs, prices of machinery will continue close and only the large and best equipped shops can make any money on the future contracts and still keep up the high quality of the work.

Yours truly,
NORDYKE & MARMON CO.
Per E.

[From The Eisenmayer Co.]

LITTLE ROCK, Ark., Dec. 11, 1884.
United States Miller, Milwaukee, Wis.:

Gentlemen:—Replying to your inquiry of 8th: No wheat raised in this section of the state now. No mill here but ours. We are shipping all our wheat in from Kansas and

Missouri. We remodeled last summer. No other mills in this part of the state; there are few mills in northwest corner of this state, where wheat is also grown, but of which we know nothing.

Yours respectfully,
EISENMAYER CO.

[Frank D. & A. Luckenbach, Bethlehem, Pa.]

Milling business good. Grain coming in freely. Best and biggest wheat crop we ever had. Milling wheat is quoted at 85 to 90 cents per bushel. Margins rather close. Wages lower by about 10 per cent. Some new mills have been built and remodeling to roller process is going on all the time. Prospects for 1885 good.

[From the Bridgewater Flouring Mills.]

FREDRICKSBURG, Va , Dec. 11, 1884.

Editor United States Miller:

Your favor of the 8th inst. received and noted. Our farmers who are able to, still hold back part, if not all, their wheat. The smaller farmers have, and still are, marketing their wheat freely, not being able to hold on, and there being little prospect of better prices in the spring. Best long berry Red is quoted at 82 to 85 cents; Fultz, 78 to 81 cents, the latter variety constituting a large portion of the crop. From 25 to 33 per cent. less has been seeded down this fall on account of drought. Wages same as in January 1884. Good hands are scarce. The Bridgewater mills have been remodeled to a complete roller mill this year. No prospect of any more changes now.

Yours truly,
J. B. FICKLEN, Manager.

[From the Jewell Milling Co.]

BROOKLYN, N. Y., Dec. 15, 1884.

United States Miller, Milwaukee, Wis.:

Gentlemen:—Your letter of the 8th inst. on hand. We are too far to one side to give you much of the information you seek. Milling here is very much depressed, and we do not look for an improvement for some time yet. A fair price for No. 2 Red in this market is 82 cents in elevator, and same for canal. Stock in store and afloat, heavier than last year. Nothing is being done in mill building or remodeling, nor is there likely to be. Wages same as at this time last year.

Yours very truly,
JEWELL MILLING CO.

BRYN-MAWR, Pa., Dec. 15, 1884.

Editor United States Miller:

The growing wheat looks very promising and with the open fall bids fair to be a large crop. The present crop is large and of excellent qualtity, and flour from it is equal to the best in the country. Wheat is coming in freely and prices range 87 cents for No. 1 long berry and 78@80 for No. 2. Flour is very dull at $3.50@$4.75 as to quality, the latter for choice patents. Wages are about the same for the past, but will be reduced 10 to 15 per cent. for the new year. There have been a few new mills built in this state, and many old mills remodeled and capacity increased. A number are roller or part roller mills and more have adopted the Garden City system, the latter being less than one-half the cost for changing and results perfectly satisfactory. Unless there is a decided change in the milling business very few changes will be made the coming year. Over production appears to be breaking down the markets.

[From the Golden Gate Flouring Mills.]

SAN FRANCISCO, Dec. 16, 1884.

Editor United States Miller:

In reply to yours of Dec. 8: 1st. The milling interest in California is not as prosperous as usual, having sustained losses for the last two years. 2d. Grain is not coming in freely, being kept back by dry weather. 3d. Choice milling wheat is worth $1.32 per cental at San Francisco, shipping wheat $1.27. 4th. Wages are the same as in January '84. 5th. One new mill in this city this year; do not know of any more, hereabouts, though there may be; cannot say whether anybody means to build any new ones, should not think likely after the experience of '83 and '84.

Yours truly,
HORACE DAVIS & CO.

[From the Hungarian Flouring Mills.]

DENVER, Colo., Dec. 16, 1884.

United States Miller, Milwaukee:

Gents:—Your favor of 8th received, and in reply: The present condition of the grain and milling industries in this section is but fair. The prospect for the year's business, from a pecuniary point of view, is good, and we expect to pay expenses and make a little. Wheat has come to market very freely, two-thirds being out of the farmers' hands throughout this state. Fifty-five cents per bushel, in Denver, is now considered a fair price for good milling wheat. Wages for milling help are lower than in January 1884. But one new mill built in '84, two remodeled. Prospects extremely poor for next year. Milling capacity ample.

Respectfully yours,
J. K. MULLEN & CO.

[From the Silver Star Mills.]

RENO, Nev., Dec. 15, 1884.

Editor United States Miller:

Your favor of the 8th inst at hand, making inquiry concerning product and price of grain, etc., etc. In answer, have to say: Prospects of a busy season of milling better than usual for this time of year. Grain comes freely to market. Good milling wheat is worth $1.75 per cwt. Flour selling for $5.75 per bbl. Wages lower than formerly, especially for unskilled labor. No new mills being built. The wheat crop of this state does not exceed six thousand tons all told, a large part, nearly half, is produced for chicken and hog feed. The "market" here is strictly local, as there is no outlet for any surplus if we had any. To the west is Cailfornia, where wheat is worth only $1.25. To the east is the Salt Lake country, which produces all it needs and at lower prices than here. To the north we can't go, for want of low freight rates, there being no railways in that direction, and if we did go as far north as Oregon we should not find a market, as grain there is only worth half what it is here. To the south we can't get out of our own state, except to a narrow strip of California lying on the east side of mountains. So you see the matter of milling in Nevada is a matter of little importance, compared with other states. At the same time it is of considerable moment here in the *Great American Basin* in a state geographically much larger than Wisconsin, which has only about 50,000 people dependent on the rather uncertain business of mining, which interest is considered as the leading one, with cattle raising second, and farming third.

As already suggested, our situation is such that a surplus in this state could not find a profitable market on the outside, and the principal reason for this is that it costs more to make a crop here than in most other states, as the farmer here is compelled to resort to artificial irrigation in almost every instance. Unless the mining interest should revive, there is no prospect that the grain product will ever be any larger than it has been the present season. This being so, it is needless to say that mill-building is at an end.

Respectfully yours,
H. H. BECK & CO.

[From the Phœnix Mills, Arizona Territory.]

PHŒNIX, A. T., Dec. 15, 1884.

The production of wheat in this Territory is very limited, not to exceed 250,000 bushels annually, and, from the very nature of the country, will never exceed that amount to a very great extent. Flour trade, at present, is very dull and likely to remain so for the next year. The price of wheat, at present, is below the cost of production; there is no fixed value to it, prices ranging now from 50 to 60 cents per bushel for No. 1. Wages about same, at present, as last year.

Yours truly,
JOHN F. T. SMITH.

[From The Case Manufacturing Co.]

COLUMBUS, Ohio, Dec. 19, 1884.

United States Miller, Milwaukee, Wis.:

Gentlemen:—Your inquiry of the 8th at hand. We are so busy in connection with our own business that we have never had time to look after the amounts of grain, or the price of the same. In relation to wages the tendency is downward. A large number of manufacturers are cutting down the time and run on six and eight hours. Wages have not generally been reduced, but there is a prospect that they will be, soon. Our trade in the milling line has been and still continues to be good. We have, during the last year, erected about 25 new mills and have reconstructed about 75. We have never during the season been up with our orders, and have sufficient orders on our books now to run us up to the first of March. Inquiries for mill machinery continue as brisk as they were during any part of the season. Our foreign shipments have greatly increased during this year. We are sending a large amount of goods now to England. We anticipate that the coming year will be equally as good, if not better, than the year past, and we are preparing for it by the erection of a large addition to our factory. We find collections now much better than they were some six or eight weeks ago, and generally a more buoyant feeling amongst the millers, and we believe there is no discouragement in the line of mill-building or in the profits in the operation of a first-class mill on the roller system. We remain,

Yours truly,
CASE MANUFACTURING CO.
By Case.

[From Bridges & White.]

CRETE, Neb., Dec. 10, 1884.

Editor United States Miller:

The present condition of the grain and milling business is dull, decidedly so. Farmers are selling only what they are obliged to. Milling wheat brings from 45 to 50 cents at the mills. Wages are about the same as last year. A good many new mills have been built and old ones remodeled during the past year. New mills have been built at Milford, Hampton, Holdrege, Cambridge, Oxford, York, Aurora and many others. Flour trade is dull. We are putting in three double set of chilled iron and one double set of porcelain rolls, Gray's pattern; and a great many small mills are putting in rolls.

Yours truly,
BRIDGES & WHITE.

P. S.—We are putting in the rolls in place of the Jonathan Mills machines.

B. & W.

THE DESIGN OF MODERN FLOUR MILLS.

The profitable conduct of a flour mill is governed by two primary functions: 1st, the purchase of the raw material in the cheapest market; 2d, the sale of the produce in the dearest.

The purchase of wheat in the cheapest market requires the mill to be capable of treating every wheat that may happen to appear there. When, by reason of the peculiar arrangement of the mill plant, a miller is restricted to the use of particular descriptions of wheat, such restrictions will tend to enhance their price; while by the operation of the same law of supply and demand, those wheats which he is debarred from using will tend to drop in market value and play into the hands of competitors. Moreover, a miller, by allowing himself to be so restricted may destroy the difference of level between himself and his competitors which might otherwise result from fresh capital invested in the purchase and erection of new or additional plants. To sell the produce in the dearest market the miller must be in a position, by means of the machinery and its management, to manufacture the largest quantity of the very best quality the raw material is capable of yielding. Given the best combination of the best machines for a gradual reduction plant, the mechanical problem involved in the foregoing proposition turns chiefly on the variation in the effect of a given grinding appliance on various wheats or their produce. For instance, harsh wheat products require more intense grinding, but less dressing surface than mellow wheat. Hence a gradual reduction corn mill should be so equipped as to be capable of dealing with extreme variations of wheat.

The adaptability of the mill for the treatment of extreme variations of wheat depends on the following provisions: 1. A sufficient margin of grinding power. 2. A sufficient margin of dressing surface, so contrived as to be controllable either for contraction or expansion. Excess of margin, however, involves: Waste of power; waste of space; increased first cost; increased current expenditure. It is therefore necessary to devote the most searching study to the problem of accurately proportioning the plant to the work it is required to perform, with the view of fulfilling the conditions just set forth—conditions, indeed, which should be held to rule with the rigor of mathematical axioms, from which to swerve is not merely dangerous but ruinous.

Another point deserves serious consideration on the part of the miller about to venture on the installation of a gradual reduction plant. The process of gradual reduction is based on the principle of roughly breaking up the wheat into products which shall not be flour, for the purpose of sorting such products on their qualitative merits--be they accidental or organic—with the view of treating each for the production of a corresponding quality of flour. It is obvious that such a process will always yield, at the termination of certain stages, small quantities of products, which, if classed separately, would be too insignificant in quantity to merit separate treatment to occupy a separate machine. They have, therefore, to be classed with the class nearest in order of merit, and that to the detriment of the efficiency both of sorting and grinding machinery. It is obvious that the larger the output of a mill, the larger will be the quantity of each class of its products, and consequently the more numerous will be the classes, each sufficient in quantity to merit separate treatment, and hence, again, the larger the mill the more perfectly can be accomplished the classification, *i. e.*, the gradual reduction.

Next in degree of importance are the arrangements for facilitating the management of the mill. Apart from the harassed state of mind which an unmanageable mill plant induces, a persistent difficulty in the working of machinery will inevitably provoke its neglect. It is not sufficient that machines run smoothly without interruption; they should at the same time thoroughly do their work. Yet it is the former that becomes the exclusive aim of the mill hands, when persistent difficulties recur in the manipulation of any machines. For these reasons: 1. The machines selected for the mill plant should be of such simple construction, should be so powerful and adopted in such numbers, that they will perform their work with ease, and, therefore, run smoothly and uninterruptedly, while operating efficiently, during lengthened periods. This will enable the mill hands to give undivided attention to the performance of the machines, which they should be induced most vigilantly to maintain at a correct pitch. 2. In order to facilitate the control of the vigilance of the mill hands, the plant must be symmetrically disposed, easy means must be provided for testing its performance, and an efficient system of control introduced in conformity therewith.

It may seem paradoxical to point to facts so obvious, but the rapid transformation of the whole mode of manufacture seems to have thrust them out of sight, while the hurried design and the precipitate erection of gradual reduction mills resulting therefrom have promoted a state of things which makes their neglect painfully felt. Neglect on this head develops its effect most seriously just in those seasons when the margin for profit is narrowest.

Knowing the complicated difficulties of flour milling by the process of gradual reduction under the conditions which obtain in the United Kingdom, I have until recently felt the greatest reluctance to recommend its adoption. It would have been useless to explain my reasons. What possibility of being heeded on a subject which could only appeal to practical experience non-existent in this country, except in quite isolated cases? This reason for reticence, however, holds good no longer. A great number of the leading millers have plunged into the long-dreaded change, and of these a few are beginning to feel the true effects of that change.

At first, after adopting the new process, everything appears to be *couleur de rose*. "Patents," a quality of flour on a par with the better foreign brands, is produced, such as was utterly impossible under the old regime. A few trial grists with all the new machinery, keen and in apple-pie order, show results satisfactory as to yield. Now the enterprising miller rapidly sells his "patents" at what he conceives a remunerative figure, and remains undismayed when he finds that he has to be easy as to the prices for the secondary and third grades.

These pleasant auspices change after awhile. Neighboring millers become desirous of entering the list with "patents," start gradual reduction plants, and then, passing through the same set of experiences as their pioneer, sell away those delightful "patents" most merrily. Basing their trade on this article, they forthwith undersell the original maker of it. This pioneer of the "new process," in the meantime, does not find the profits to answer his expectations, for the stocktaking at the end of a year's trading reveals figures that do not correspond with those calculated from the initial trial grits. To retract now is too late. The public have become accustomed to the superior article, and competition is there to supply it. There seems to be no issue but to continue on the path already entered.

It is necessary to dilate on the difficulties of carrying on trade under the conditions and under the pressure of a reckless, because ignorant, inexperienced competion. There can be little doubt that under such continually increasing difficulties much greater and much minuter attention must be given to the design and construction, and most of all, to the management of flour mills. Now arises the necessity of studying each design upon its special merits, based upon a natural development of the trade the miller has already established. But such separate study of each design is fatal to the contractor's essential—uniformity; and therefore it becomes absolutely necessary to disengage the design of the mill from the hands of the mill-furnisher, whom the most powerful influence—the laws of economy—inevitably urge to organize his work for the production of uniform articles under the same set of plans, to thereby reduce first cost. The closer the competition the more powerfully will the mill-furnisher be urged in this direction.

But, it will be asked, is not such a natural development of economy the very result millers should endeavor to promote in these trying times of revolution? Economy! Yes, but not economy in the wrong place. To curtail the legitimate expenditure for the first outlay in the design and construction of the mill means the substitution of a continuous after-expense; it may mean the saving at the outset of £500, or £1,000 by having continually to pay 6d. or 1s. per quarter more for the wheat.

Are millers, then, to be thrown upon their own resources for the design of gradual reduction mills? Few millers have leisure or the technical training needed for the elaboration of the details of such work. But no mill should be designed without the miller's concurrence—his hand should take part in drafting the broad lines, and his practical experience should be brought to bear on and vigilantly observe all points which affect or are likely to be affected by local needs.

A point of no mean importance is the danger arising from overstatements by vendors of machinery. Their representations, without being necessarily given in bad faith, are usually founded on maximum results, obtained under all the most favorable conditions it was possible to secure, and therefore asserted with confidence. Now in order to guard against the tendency of adventurous trading induced by the expectation of and belief in extraordinary results, based as they are on premises rarely rigorously established, the miller requires to be told the average results which take into consideration all the contingencies arising out of the natural course of manufacture and trading. Such facts, however, are most likely to be learned from those whose professional reputation rests on the accurate knowledge of such facts, whose judgment and vision is not obscured by the strife and competition of trade.

In other departments of technical work the practice of resorting to professional advice for the design of mill plants, and the drafting of specifications in conformity with the most recent experience as a control and check on the manufacturers and vendors of special machinery, has been generally established. I venture to submit that this practice, being a rational division of labor, should be extended to flour-milling. Millers who imagine they can get their designs made for nothing by mill-furnishers, should reflect whether their experience can point to able men doing good work for nothing. Work undertaken under such a pretext is either scamped or paid for under cover of other charges, and therefore uncontrollable. I am aware that to the great majority of millers accustomed to the gorgeous pictures of the Eldorado in milling, as which gradual reduction is generally displayed to their admiring gaze, my words will find no echo, but those who have gathered experience during the last momentous years, who like to grasp a great task with the earnest painstaking which alone can secure its accomplishment, will understand me.—*J. A. Arnold Bucholz, in the Miller, London.*

NEWS.

Nearly 23,000 patents have been issued during 1884.

Marquette, Mich., is said to be an excellent location for a flouring mill.

The capital stock of the Dubuque (Ia.) Oat Meal Mill Co. has been increased to $80,000.

W. J. Robb, lately with Winona Mill Co., has accepted a position with Edw. P. Allis & Co.

Hoople's Mill at Sauk Centre, Minn., was destroyed by fire Dec. 19. Loss $15,000; insurance $10,000.

The Ellwood elevator at Lycamon, Ill., was destroyed by fire, Dec. 7. Loss $20,000; insurance small.

Chas. Espenschied, the Hastings, Minn., miller, contemplates enlarging his capacity by 500 bbls. per day.

Wm. Elwell is about to build a 150-barrels roller mill at Sheboygan, Wis. It will be run by steam power.

The Washburn Mills at Minneapolis will be supplied by Jan. 1, 1885, with two 1000-horse-power Wright engines.

The Brown Mfg. Co. of Cleveland, O., manufacturers of engines, etc., have sold out to Messrs. F. & H. H. Brown.

Geo. Hysers' mill in Brown's Canon, Col., was completely destroyed by a cyclone, Dec. 3. Loss $9,000; no insurance.

It is said that $200,000 will be expended for water-power and milling improvements in Minneapolis during the present winter.

Sixty persons have been poisoned, many of them being in a dangerous condition, in the outlying village of Hernais, Austria, owing to the carelessness of a corn dealer in mixing rat poison with the flour.

The Illinois State Millers' Association met at Springfield, Dec. 3, with a goodly number of old members present. The treasurer's report shows the Association's financial affairs to be in a healthy condition.

BURNED—John Bidwell's mill at Chico, Cal. Loss $40,000: insurance $28,000. W. Patton & Co.'s mill at Aitkin, Minn. Loss $18,000 insurance $7,000. It will be rebuilt immediately.

Sidle, Fletcher, Holmes & Co., of Minneapolis, will make an elaborate display of flour at the New Orleans Exposition. The Washburn & Crosby Co., and Pillsbury & Co. will also make exhibits.

Messrs. Willenbrink Bros.' new mill at New Richmond, O., has just been completed. Mr. S. H. Stout had entire charge of the work, and the mill started up satisfactorily. It is a 75 bbl. roller mill (Stevens) and is run by steam power.

Cargill Bro.'s water power flouring mill, at Whalan, Minn., about 45 miles west of La Crosse, on the Southern Minnesota Div., was entirely destroyed by fire Dec. 18. The mill had been completely remodeled to the roller system, with the very best machinery, and was valued at $30,000; insurance $15,000. Three thousand bushels of wheat and five hundred bbls. of flour were destroyed. The mill was the best in Southern Minnesota, and will, probably, be rebuilt.

The new milling establishment of the Eldred Milling Company, of Jackson, Mich., is located near, and will receive its power from the engine driving the purifier and centrifugal reel factory of the George T. Smith Middlings Purifier Co. at that place. It will be equipped with Smith purifiers and Smith centrifugals, and is designed to be a model roller mill open to those interested in the most advanced ideas of modern milling. Stevens rolls will be used, the contract for the same having been awarded to the J. T. Noye Mfg. Co., of Buffalo, N. Y.

The Case Manufacturing Co., Columbus, O., have secured the contract of L. C. Lillard & Co., Marion, Ind., for a complete line of breaks, rolls, purifiers, centrifugal reels, bolting chests, etc., for a full gradual reduction mill on the Case system, using 14 pairs of rolls. The Case Co. have also just received a cable order from A. B. Childs & Co., London, for three purifiers; also the contract for S. E. Dewey's mill at Waterford, Pa.; for the mill of Wm. Lumpkins, at Owensboro', Ky.; rolls for W. M. Green's mill at Charlestown, Ind.; and also for machinery for N. S. Martz's mill at Greenwood, Ind.

At a meeting of the stockholders of the Lake Superior Elevator Co., held in Duluth, December 23, it was definitely decided to build another elevator at Duluth for the business of the coming year, with a capacity of 1,500,000 bushels. It is understood the Union Improvement and Elevator Co. will also build another of 1,000,000 bushels capacity. The erection of these elevators has been rendered absolutely necessary, by the proportions which the grain trade at Duluth has assumed, and by reason of the fact that the trade is increasing so rapidly. Large transactions now take place on 'change daily, and many new members have recently joined the board of trade. Duluth, the past season, shipped very nearly if not fully, as much wheat as Chicago, and she already has in store for winter storage, 4,500,000 bushels, and will have 6,000,000 bushels in all. When the new houses are completed, her capacity will be 8,700,000 bushels.

The Case Mfg. Co., Columbus, O., have been awarded the contract for remodeling the New Era Mills of Nashville, Tenn., to the full roller system. This mill when completed will be one of the largest and most complete mills south of the Ohio River. It will contain thirty-four sets of rolls, most of which are 9x30, also thirty-nine reels and scalpers, nine purifiers, and other machinery necessary for a complete 400-barrel mill. This is the second mill built by the Case Mfg. Co. in Nashville, Mr. E. T. Noel's mill of 375 barrels capacity having been in successful operation for about two years. There was a sharp competition between the roll men to get this contract, as the city of Nashville is the most important milling center of the South. The awarding of the contract to the Case Co., together with the numbers of mills they are now building in Tennessee and Kentucky, indicates that this young but vigorous company have a strong foothold in the South, and that they are determined to hold it.

The Case Mfg. Co., Columbus, O., writes us that they are in receipt of a large box of delicious oranges, sent direct and fresh from the Florida grove owned by J. P. Felt. Mr. Felt is also the owner and successful operator of the "Emporium Mills," Emporium, Pa., which two years ago were enlarged and remodeled to the full roller system by the Case Mfg. Co. This is the second annual box received from Mr. Felt, and the Case Company says: "We must say they are the most delicious fruit we have ever seen of the kind." They then, like Silas Wegg, drop into poetry thus:

'Tis good to have a friend, Friend Felt,
Who each returning year,
Will feel to'ards us as thou has felt,
And rich gifts send to cheer.

We have a number seven "felt,"
Now on election due,
And when we get it we have felt,
Friend Felt, we'd send to you.

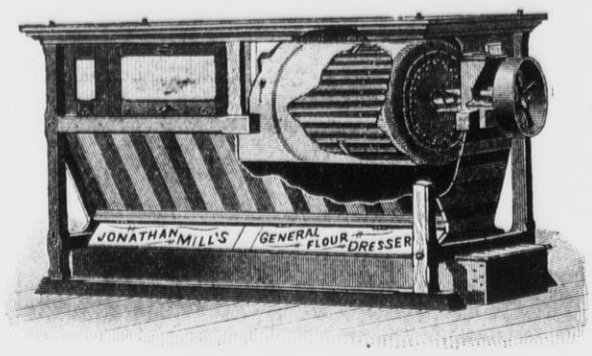
For fear *that* "felt" we ne'er acquire,
We send you "Deal's" fine flour trier;
But towards the—"Felt" will e'er aspire.

The Case Manufacturing Co. have received the following orders during the month: From Van Horn Bro's, Lainard, Kans., for a full outfit of breaks, rolls, purifiers, scalpers, bolting chests, etc., for a complete roller mill on the Case system,—12 pairs of rolls with automatic feed will be used; from C. E. Buck, Richmond, Va., for a complete outfit of breaks, rolls, purifiers, scalpers, centrifugals, etc., for a full gradual reduction mill on the Case system; from Stanley & Bickle, Glenwood, Mo., for a full line of rolls, purifiers, centrifugals, scalpers, etc., for a gradual reduction mill on the Case system; from L. C. Lillard & Co., Marion, Ind., for a full line of breaks, rolls, purifiers, centrifugals, scalpers, bolting reels, etc., for a complete gradual reduction mill on the Case system, using 12 pairs rolls; from N. S. Maity, Greenwood, Ind., for one Little Giant break machine, one improved centrifugal reel and other machinery; from Gray & Fisher, Lawrence, Mich., for seven pairs rolls; from W. M. Green Charlestown, Ind., one pair rolls, with patent automatic feed; from the Lehman Grinding Disk Co., Kansas City, Mo., for one pair rolls, with patent automatic feed; from B. Buffat & Son, Knoxville, Tenn. for one pair rolls with patent automatic feed; from Chas. Troup, Walaska, Ill., for two pairs rolls with patent automatic feed; from Schevenke & Emde, Sugar Grove, O., for one No. 1 single purifier; from the Great Western Mfg. Co., of Leavenworth, Kans., for eight pairs rolls with patent automatic feed, to be shipped to J. W. Stover, Fredonia, Kans.; from M. Lynn, Belden, Ind., for breaks, rolls, scalpers, etc.; from the Richmond City Mill Works, Richmond, Ind., for one pair rolls with automatic feed, to be shipped to Mt. Sterling, Ky.; from Richter & Co., Williamstown, W. Va., for one pair rolls with automatic feed; from R. Tuttle & Co., Columbus City, Ind., for one No. 1 double purifier; from Myers & Natger, Spencer, O., for four pairs rolls with patent automatic feed.

Edw. P. Allis & Co., of the Reliance Works, Milwaukee, Wis., have recently received the following orders for their celebrated Gray's noiseless belt roller mills: Geo. W. Smith, Clearfield, Pa., ten pairs Allis rolls in Gray's noiseless belt frames, and other machinery necessary to fit them out on the roller system; C. A. Gambrill & Co., Baltimore, Md., one double machine; R. M. Todd & Co., Albert Lea, Minn., one double machine; A. Pardee & Co., Mauch Chunk, Pa., one double porcelain roller mill; Northey Bros., Woonsocket, D. T., a No. 2 four-break reduction machine, double roller mill, etc.; R. W. Mehard, East Brook, Pa., five double machines and other special machinery to give them a full roller mill; Lyman & Co., St. Joseph, Mo., two double machines, etc.; G. Bechtel, Burford, Ont., two double machines, and complete outfit for their mill, including a No. 2 four break machine, etc.—Mr. Bechtel, after carefully looking into the merits of the various machines decided to place his order with Allis & Co.: Sits & Kirchner, Peterson Ia., three double machines, etc.; J. A. Simscott, Fair Haven, Minn., four double machines; McClintock & Tyson Bros., Rossville, Kas., one double machine; Shick & Wamshor, Pt. Clinton, Pa., one double machine; Thomas Williams, Pontiac, Ill., one No. 2 four-break machine, two double roller mills, and machinery necessary to put them on the roller system; J. Markley, Minneapolis, Minn., one double machine; Cedar Falls Mill Co., Cedar Falls, Ia., one double machine; A. T. Parker, Mason City, Ia., four double machines, and other special machinery; G. W. Cunningham, Tiffin, Ohio, one double machine; A. & H. Wilcox, Jackson, Mich., one single machine; J. D. & P. Hasbrouck, High Falls, N. Y., a No. 2 four-break machine; Hill & Fry, Holdredge, Neb., a No. 2 four-break machine, two double machines, also a 10x30 Reynolds-Corliss engine complete; R. McAdoo & Co., Tiffin, Ohio, five double machines, etc.; M. J. Church, Fresno., Cal., four double machines; Milford & Wilson, Ord, Neb, four double machines, and necessary machinery for a roller mill; O. Dillin & Son, Marengo, Ia., a No. 2 four-break reduction machine, two double machines, etc.; Jos. Kratochwill, Dayton, Ohio, one double machine; R. Thomas & Co., Newman, Ill., one double machine.

SPECIAL BUSINESS NOTICES

Jonathan Mills Universal Flour Dresser



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FOR CLEAR, CLEAN BOLTING OR RE-BOLTING OF ALL GRADES OF FLOUR.

FINELY DESIGNED AND MECHANICALLY CONSTRUCTED;

SLOW SPEED. *OCCUPIES SMALL SPACE, AND HAS IMMENSE CAPACITY.*

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Send also for 150 Page Catalogue Describing their Engine.

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Send for Catalogue and Prices.

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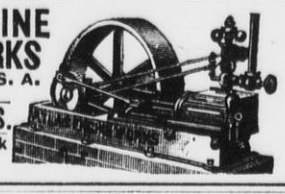

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FROM 1-4 to 15,000 LBS. WEIGHT.

True to Pattern, sound, solid, free from blow-holes, and of unequaled strength.
Stronger, and more durable than Iron forgings in any position or for any service whatever.
20,000 CRANK SHAFTS and 15,000 GEAR WHEELS of this steel now running prove this.
CRANK SHAFTS and GEARING specialties.
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GREENHILL BROS.,

35 HIGH ST., BELFAST, IRELAND.

Sell on Commission for

Exporters of American Produce,

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REFERENCES:

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FOR SALE.

A horizontal boiler and engine in first-class condition. Boiler 15 horse power. Engine 10 horse power. Can be seen running at the RIVERSIDE PRINTING OFFICE, 124 Grand Ave., Milwaukee. Also Feed Water Heater and line of Shafting.

Rolls Re-ground and Re-corrugated.

ROBERT JAMISON,

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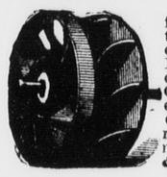
DeLOACH WATER WHEELS.



Simplest and Cheapest Manufactured, and have received the unqualified endorsement of all who have used them. Every small Mill can afford one. Send for large Illustrated Catalogue of Wheels and general Mill supplies. "*The Star Grit*" Mill stones from our quarry are unsurpassed and sell remarkably low. **A. A. DeLoach & Bro., Atlanta, Ga. U. S. A.**

READ TESTIMONIAL.

Will Grow Poor in the Business.

ELKADER FLOURING MILLS, Elkader, Iowa, March 12, 1884.
COCKLE SEPARATOR MFG. Co., Milwaukee, Wis.
GENTLEMEN:—Your favor of the 5th at hand and noted. We bought one No. 2 machine of you, we think in 1877; it has always done its work satisfactorily and continues to do so. We have not laid out one cent for repairs. If you make all your machines to last as well as ours, you will grow poor in the business.
Yours truly,
W. SCHMIDT & BRO.

BRAN AND MIDDLINGS.

MITCHINER & LYNNE,

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Are C. I. F. Buyers of the Above.

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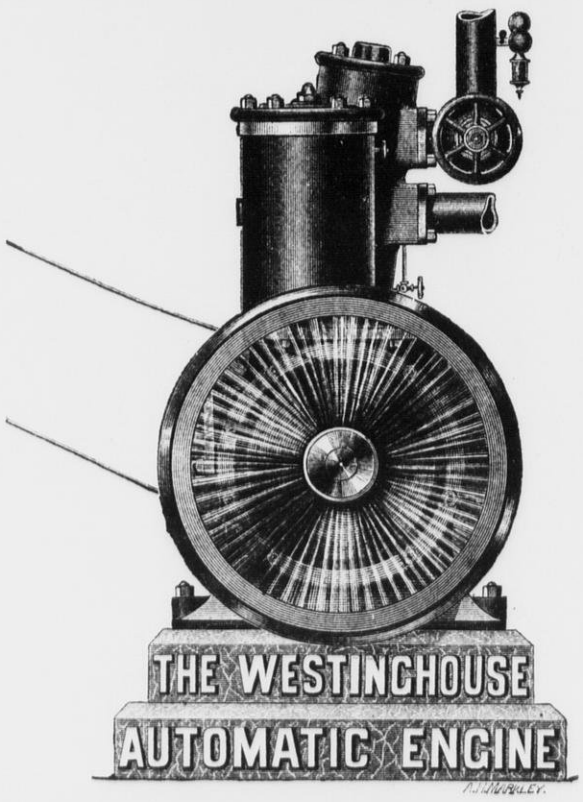

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Patapsco Flouring Mills.

ESTABLISHED 1774.

C. A. Gambrill Manufacturing Co.

Baltimore, Sept 18 1884

Geo: T. Smith Middlings Purifier Co:

Jackson Mich.

Gentlemen, In reply to your favor — date we would say the Seven No: 0. and the One No: 1 Reels bo't of you last spring are entirely satisfacting in every particular, the quality of the work they are doing is fully up to and the quantity far exceeds our expectations

Very truly yours

C. A. GAMBRILL M'F'G. CO.

H. C. Conner Sup

See Page 58.

The United States MILLER

Published by E. HARRISON CAWKER. { Vol. 18, No. 4. } MILWAUKEE, FEBRUARY, 1885. { Terms: $1.00 a Year in Advance. Single Copies, 10 Cents.

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MILLERS' NATIONAL ASSOCIATION.

Secretary Seamans issued the following call to members of the Executive Committee of the Millers' National Association, Jan. 5, 1885.

SECRETARY'S OFFICE,
Milwaukee, Wis., Jan. 5, 1885.

Dear Sir:—There will be a meeting of the entire Executive Committee, Millers' National Association, at the Grand Pacific Hotel, Chicago, Jan. 19th and 20th, 1885.

This meeting is called for the purpose of entertaining and discussing any and all matters of value and interest, and attend to any business that may be deemed important and for the good of the Association or its members. Among other matters requiring attention may be mentioned:

INSURANCE (fire) and the desirability of an increase in the facilities of Mutual Companies.

REBATES on jute bags exported with flour.

TRANSPORTATION—Domestic and Foreign.

BRAN COMPRESSORS—To decide upon the merits of such as may be presented or ready for trial.

It is not expected this meeting will be confined exclusively to the regular Executive Committee, but each State is requested to send one or more live representatives.

Respectfully,
S. H. SEAMANS, Sec'y.

In response to the above call, the following gentlemen, representing seven States, met at the Grand Pacific Hotel, Chicago, Monday A. M., Jan'y 19th, 1885:

J. A. Christian, Pres., Minneapolis, Minn.
S. H. Seamans, Sec'y, Milwaukee, Wis.
C. H. Seybt, Chm'n Ex.Com., Highland, Ill.
J. A. Hinds, " " Rochester, N.Y.
Homer Baldwin " " Youngstown, O.
Rob't Colton, Sec. O.M.Ass'n, Belfontaine, O.
N. Elles " Ind. " " Evansville, Ind.
H. C. Cole, Chester, Ill.
H. L. Halliday, Cairo, "
D. R. Sparks, Alton, "

Other States would have been represented but for blockade of railroads by snow.

Meeting called to order by the President, J. A. Christian, of Minneapolis.

On motion of C. H. Seybt, the subject of Mill Insurance, was taken under consideration. In discussing this matter, Mr. Seybt stated, that the rate of insurance on flour mills, as adopted by the stock companies within the board, was extortionate, and by way of illustration gave his recent experience. A stock company in St. Louis, that had been carrying a $5,000 policy on his mill for 16 years, notified him at the date of its expiration, a few days since, that they would only take $2,000, and the rate would be increased to 5.60, while the actual cost the past year, in the Millers National Insurance Company—which takes nothing but mill risks—was less than 3 per cent., and the average for the past eight years, or during the life of the company, was only 52-100 of the old rates established by the board companies, showing conclusively to his mind, that mutual companies properly conducted, which make a specialty of mill insurance, can, and do insure cheaper than stock companies.

Mr. Sparks, of Alton, favored those present with his experience in mutual companies, particularly in the Millers' National and the Illinois Millers' Mutual, (the latter of which he is president), and urged strongly the expediency of an increase in the maximum by the Millers' National, on one risk to $15,000, which, he contended, was no greater proportion for the company to assume in its present prosperous financial condition, than when the company first increased its maximum to $10,000.

After a general discussion by Messrs. Halliday, Cole, Baldwin and others, it was

Resolved, That the matter of insurance be postponed until the afternoon session, when Mr. Barnum, Secretary of the M. N. Ins. Co., could be present; he being a practical insurance man, might give the committee much information that would prove valuable in discussing the subject under consideration; which was agreed to.

REBATE ON JUTE BAGS EXPORTED.

Information having been received by the Committee, since the call issued for this meeting, that the difficulties which had of late obstructed the collections of rebates had been removed, and the further information that the Treasury Department had commenced the payment of delayed claims, therefore any action on the part of the committee was deemed unnecessary. Adjourned.

AFTERNOON SESSION.

Mr. Christian in the Chair.

The Secretary stated that inasmuch as inquiries had been made regarding the proper party entitled to the custom house B. of L. for flour sold in jute bags for export to domestic buyers, believed that an expression by the committee would be accepted generally as a basis of future transactions.

After a full and general discussion, Mr. Seybt offered the following:

Resolved, That millers selling flour for export in jute bags shall be entitled to the bill of lading for the purpose of collecting the drawback on said bags.

Resolved, That the Secretary of this Association be and is hereby instructed to publish this resolution in the milling papers.

Mr. W. L. Barnum, Secretary of the Miller's National Insurance Company, being present, the subject of mutual mill insurance was taken up for consideration; but owing to the lateness of the hour, and the limited time at Mr. Barnum's disposal, it was suggested, and the suggestion adopted, that the subject be made the special business of the committee, to be taken up at 10 o'clock A. M., to-morrow, at the office of the Insurance Company on La Salle street. Adjourned to 7 o'clock.

EVENING SESSION, NEW YORK.

Mr. J. A. Hinds, Secretary of the New York State Millers' Association, presented a bill for $500, made by Judge H. R. Selden of Rochester, based upon an agreement claimed to have been made with the Defence Association of New York Millers in 1876, concerning a contingent fee, to be paid to him in case the Denchfield suits were finally decided in favor of the defendants.

The committee refused to allow said claim for the following reasons:

1st. While the committee has not the original before them, the wording of the receipt attached to the account rendered, indicated that the contingent fee was based upon a *successful* and *final termination* of the litigation under the auspices of Judge Selden, and the defendants to these suits. Judge Selden, however, was defeated in all the suits in the courts below, and success was not secured until taken into the higher courts by the National Millers' Association (its attorneys, together with a liberal expenditure of time and money), and it is the opinion of this committee that Judge Selden cannot consistently claim a contingent fee under the circumstances.

2d. The agreement with Judge Selden was entered into by the defendants (millers of Rochester, New York), many years prior to the time of the National Association assuming charge of the defence in the Denchfield suits, and the agreement never having been made known to, or authorized by the Association, they must refuse to entertain the claim.

Signed,

C. SEYBT, Ills., Chairman.
J. A. CHRISTIAN, Minn.
S. H. SEAMANS, Wis.

BRAN COMPRESSORS.

The Secretary stated that no machine had yet been presented, in actual working order, that fully met the requirements laid down by the committee governing the award. There were, however, several machines under way, and nearing completion, three of which were being built by large machine works that usually made a success of the machinery they built. He felt satisfied they would either solve the problem or prove the requirements impracticable. In addition to the parties named above, there were others, inventors, working individually, that had great hopes of being successful, while there were others, perhaps one hundred, that had fallen out of the ranks and given up trying to secure the offer.

Under these circumstances, it would be for the committee to say whether further time should be granted.

Mr. Seybt offered the following:

Resolved, That the award of the premium of $1000 for the invention of a Bran Compressor coming up to the requirements as stipulated by the Association be hereby deferred until December 1st, 1885.

Mr. Seamans stated that this would necessitate delaying the award till the date named in the resolution, whereas the parties likely to be successful would be ready with their inventions long before this date. He would therefore offer an amendment fixing the date of expiration July 1st, 1885, which was approved, and the resolution as amended was adopted.

Adjourned "to 9 A. M. to-morrow," January 20th:

MORNING SESSION.

J. A. Christian presiding.

LONDON EXPOSITION, 1886.

Mr. Seybt desired to call attention of the committee to the fact that Great Britain would hold an exposition in London in the spring of 1886, open to the world. Each country making a complete exhibit of its own; for instance, America would be invited to have an exposition of its own in the city of London, at the same time that other nations and countries held similar exhibits; and he suggested the propriety of the milling industry, (it being one of the largest) and its production having the most extensive sale in Great Britain of any in this country, being well and fully represented and in order that a favorable exhibit might be secured, he believed the Association, as an organization, should encourage, and through its officers and members use every endeavor to secure such a representation of milling products as would show to foreign consumers, and the world at large, the diversity and extent of our milling facilities. After a thorough discussion of the matter the following resolution was offered by Mr. Elles of Indiana:

Resolved, That a committee of seven be appointed whose duty it shall be to take cognizance of the exposition of American products, to be held in London, May 1886, and further, that Mr. C. H. Seybt, who is soon to visit London, is hereby instructed to investigate and report to the Secretary what action is necessary, in order that the American milling industry may be properly represented."

Resolution adopted.

The committee then adjourned to the office of the Millers' National Insurance Co., on La Salle st., to confer with the officers of the company regarding the increase of the maximum rate of insurance on mills from $10,000 to $15,000.

2 P. M., AFTERNOON SESSION.

Meeting called to order by President Christian. The conference with the officers of the Insurance Company resulted in the following being offered by Mr. Cole, of Chester, Ill.

Resolved, By the Executive Committee of the Millers' National Association, in session at Chicago, Ills., Jan. 19th and 20th, 1885, that the managers of the Millers' National Insurance Company, be requested to increase the maximum of insurance on any one risk to fifteen (15) thousand dollars, *providing* at least fifty (50) applications for such additional insurance are on file and are up to the requirements of said company.

Resolved, That the Secretary is hereby instructed to send a copy of the above resolution to the manager of the Millers' National Insurance Company.

Adopted.

EXPORT COMMITTEE.

Mr. Seybt called the attention of the committee to the unprotected and irregular manner in which our export trade was done, it being subject to no rules or regulations of our own, while the transportation company and the European buyer formulated such rules and regulations as best protected their interests, which were not always to the best interest of the seller or exporter, and it was his belief that this association should take some action looking to the protection of those engaged in the trade, which now covered a majority of the mills in the association.

After a very general discussion, and exchange of experiences, regarding delays in transit—Arbitrations—Rules of the London Flour Trade Association—Liability of seller and buyer, etc,, etc., the following was adopted:

Resolved, That a standing committee of five be appointed, to be known as the Export Committee, whose duty it shall be to facilitate the export trade in flour by taking action calculated to remove as far as practicable all present obstacles and hardships connected therewith, having their origin either with the consignor, consignee, with the transportation or insurance companies, to bring about and establish a better understanding by and between all parties as to their respective rights, duties and liabilities both at home and abroad, to establish such rules and regulations as they deem advisable for the promotion of the trade. The said committee to receive and give careful consideration to all complaints submitted in writing from members of the association, and, if necessary to employ competent legal counsel, and without further instruction or authorization, bring any case so presented and investigated before the proper tribunal for adjudication, at the expense of this association, *providing* no cases shall be contested by the association unless they imbody principles of general interest and importance to the export trade.

The committee called for in the foregoing resolution, was nominated and appointed by the Chair, to wit:

C. H. SEYBT, Highland, Chm'n.
S. H. SEAMANS, Milwaukee, Sec'y.
Z. T. COLE, Chicago.
J. A. CHRISTIAN, Minneapolis.
M. MATHEWS (of S. & M.) Buffalo.

There being no further business before the committee adjourned, *sine die*.

S. H. SEAMANS, Sec'y.

MORE than three hundred years ago an English historian gave the following description of a saw-mill: "The saw-mill is driven with an upright wheel, and the water that maketh it go is gathered whole into a narrow trough, which delivereth the same water to the wheels. This wheel hath a piece of timber put to the axle-tree end, like the handle of a broch, and fastened to the end of the saw, which being turned by the force of the water, hoisteth up and down the saw, that it continually eateth in, and the handle of the saw is kept in a rigall of wood from swerving. Also the timber lieth as it were upon a ladder, which is brought by little to the saw with another vice."

LUSTROUS POLISH FOR CABINET WORK.—A fine, lustrous polish for delicate cabinet work can be made as follows: Half pint linseed oil, half pint of old ale, the white of an egg, one ounce spirits of wine, one ounce spirits of salts. Shake well before using. A little to be applied to the face of a soft linen pad, and lightly rubbed for a minute or two over the article to be restored, which should be first rubbed off with an old silk handkerchief. It will keep any length of time if well corked.

A LAWYER'S ADVICE.—It is related that a banker's clerk, during the past summer, stole from his employers in the city of New York, $100,000 which he lost betting at faro. He called upon a lawyer for advice, making a full confession of his crime. Between the consummate pair of scoundrels the following dialogue then ensued. Quoth the lawyer:

"How much does your defalcation amount to?"

"One hundred thousand dollars."

"Got any of it left?"

"Not a cent."

"That's bad; you have left nothing to work with."

"What must be done?"

"You must return to your desk and abstract another hundred thousand dollars."

"What must I do that for?"

"To preserve your character and save you from going to the state prison. With the hundred thousand dollars you are to steal to-morrow I intend to compromise with the bank. Your stealings after to-morrow will amount to $200,000. I will call at the bank and confess your offence. I will represent myself as your heart-broken uncle, honest but poor; I will offer the bank $50,000 to hush up the matter; the bank will accept. This will leave $50,000 to divide between you and me—that is $25,000 apiece. With that you can retire from business."

The young man listened and learned rascality. He doubled his defalcation, and compromised as the lawyer said he should. He is now thought to be worth $25,000 and is counted "one of the most respectable gentlemen in the city of New York," though he knows that he is a worthless thief.

AND now we are told that the project is on foot again to transform, by the aid of Uncle Sam's pocket book, our Erie canal into a ship canal capable of passing vessels from tide water to the upper lakes. We really thought that the project had been dismissed long ago, but it appears to be resurrected, for a bill to that effect is introduced into the House of Representatives, asking for the modest little sum of $8,000,000 to aid in the work. As the National Treasury is filled to overflowing, and the income exceeds the expenses, some avenue of escape for the surplus has to be provided, but of all the schemes invented for that purpose, the transformation of the Erie canal into a ship-canal, appears to us to be the wildest, especially when we read that by the way of special inducements, this bill provides for the free passage through the projected canal of all American "war ships." Well, it is perfectly safe to predict that this bill will be doomed to oblivion, and that the great statesman whose giant intellect originated the scheme will not see his name handed down to posterity as the great benefactor of the commerce of New York State and the father of the Erie ship-canal.—*Milling World.*

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ANNOUNCEMENT:

☞WM. DUNHAM, *Editor of "The Miller," 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.*

MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

ACADEMY OF MUSIC.—Performances every evening. Wednesday, Saturday and Sunday matinees.

SLENSBY'S VARIETY THEATER—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

THE annual report of the *Millers' National Insurance Company* of No. 143 LaSalle St., Chicago. Ill., is at hand, and shows the Company to have a surplus over all liabilities of $833,907.00. Since its organization the company has paid losses amounting in all to $416,502.48.

DURING the month of January the Wisconsin Central Railroad completed their track to St. Paul and Minneapolis, and has thrown the through line open for business. The Wisconsin Central is one of the finest equipped and most important lines in the Northwest, and from the beginning the Company has shown great enterprise. It has surmounted innumerable difficulties in the past, but now its future seems bright. This road is of great importance to Milwaukee. It will do an immense passenger traffic, as well as freight. Everybody going to St. Paul and return now figures on going one way on the Wisconsin Central.

WE call the attention of steam users to the card of Messrs. Mayer & Ackerman, of Milwaukee, published in this issue. Their pipe-covering was recently submitted to a trying test by the Western Manufacturers Mutual Insurance Co., of Chicago, and is considered one of the very best coverings made.

THOSE of our readers desiring a first-class machine for grinding feed, wet or dry, will do well to read the advertisement of Bolte's Four-high Roller Mill, on page 61 of this paper. The machine has been thoroughly tested, meeting all the requirements satisfactorily. This mill is also well adapted to the use of maltsters, distillers, spice mills, etc.

NEARLY all the State Legislatures now in session have bills under consideration concerning the grain trade.

THE Minneapolis Head Millers Association have awarded the contract for erecting a monument in memory of the victims of the great milling explosion, to Messrs. Sullivan & Farnham, of Minneapolis. The monument will be 35 feet high, and will cost $3,500.

THE New York Produce Exchange is organizing a clearing house for the grain trade in New York, for the clearance of contracts between members of the Exchange. The proposed plans provide for a clearing department, with a manager and clerks sworn to secresy, under the control of a committee of three. The plan provides for daily settlements.

THE *Mail and Express* says: The report of the American Consul at Calcutta ought to be reassuring to wheat-growers in this country. The wheat crop in India for 1884 is 245,000,000 bushels, raised on 26,000,000 acres of land, or 9 2-5 bushels to the acre. The United States average last year was 13 bushels. The Delhi price is 80 cents per bushel; cost of transportation from Delhi to Calcutta 19½ cents; cost from Chicago to New York about 15 cents, and New York is twice as near European markets as Calcutta. If wheat can be raised and sold in Chicago at 80 cents per bushel, there can be no competition by East India growers.

MILL DAM LAWS UPHELD.—Nearly all the states in the Union have statutes authorizing any person to maintain a mill dam on a non-navigable stream on his own land by paying to the owners of overflowed land such damages as may be assessed. In a case carried to the United States Supreme Court from New Hampshire it was claimed that the effect of such a law was to deprive the owners of overflowed land of their property without due process of law, and hence that the statute was in violation of the fourteenth amendment to the federal constitution. In an opinion rendered by Justice Gray, January 17th, the Court sustains the validity of the New Hampshire act. This may be regarded as a test case and the decision as upholding the "mill dam laws" in the other states.

WHEAT in the olden time, we read, sold for twenty shillings per quarter, equal to £6 now; in the years 1193, 1194, and 1195, for twelve pence a quarter; beans and oats for four pence, in 1216. Wheat sold in some places for twelve pence a quarter, and not many years after for twenty shillings a bushel, as much as four ponnds now, 1286; wheat sold for forty shillings a quarter, as much as eight pounds now, 1315; wheat sold for three pounds a bushel, 1316; wheat sold for forty shillings a quarter, as much as twenty shillings a bushel now, 1335; wheat sold in London for four shillings a quarter, 1493.

In the reign of			£	s.	d.
Philip and Mary	it sold for	per qr.	0	6	8
Elizabeth	"	"	0	9	0
James I.	"	"	0	11	6
Charles I.	"	"	0	14	0
Charles II.	"	"	1	0	0
James II.	"	"	1	4	0
William and Mary	"	"	1	11	0
Anne	"	"	1	13	0
George I.	"	"	2	0	0
George II.	"	"	2	15	0

FOREIGN ITEMS.

THE first complete roller flour mill in India has just been built by the Bombay Flour Milling Co., Limited, at Bombay, India. The mill uses the system of H. Simon, of Manchester, England.

J. HARRISON CARTER, milling engineer, of London, England, has recently shipped the machinery for a roller mill for Messrs. Balfour, Williamson & Co. at Corinto, Chili, South America.

THE losses by mill fires in Great Britain during the year 1884 amounted to nearly $900,000.

D. UHLHORN of Grevenbroich, Prussia, has recently patented a rye hulling machine which is said to give excellent results.

A VERY large grain elevator is nearly completed at Liverpool for the reception and storage of grain. It will be thoroughly equipped with grain cleaning and automatic weighing machinery.

BUDAPEST milling companies are fairly well satisfied with the business for 1884, after taking American competition into consideration.

MILLING schools will, no doubt, soon be in operation in Paris.

A GERMAN writer says that there will doubtless be yet a considerable change made in the manner of making flour. The present revolution has been too rapid to be entirely devoid of defects. It is scarcely possible to predict what kind of flour will be made a century hence. Possibly, then, the milling methods of to-day will be considered obsolete, as the majority of millers now regard the old style of low-milling. Such a complete change as has taken place during recent years can scarcely be looked for. Improvements in details may be looked for. The present methods of cleaning and bolting are not yet perfect by any means, and will surely be improved. The object of perfect milling is to produce a flour free from bran, and a bran free from flour. This has not yet been done and it is possible that the flour of the future will approximate the desired object.

RUSSIAN VS. AMERICAN WHEAT IN SWITZERLAND.

REPORT BY CONSUL-GENERAL M. J. CRAMER, OF BERNE.

Referring to my dispatch No. 67, of the 23d of August, concerning the danger of Russian wheat driving American wheat from the Swiss market, I have now the honor to further inform you that the rich harvests of the present season in Russia, as well as the masses of wheat stored in various parts of that country, especially in Odessa, and the reduction of the through freight tariff, leave little doubt that Russian wheat will supersede American wheat in Switzerland and South Germany.

The Russian wheat dealers strain every nerve to supply the markets of Central and Southwestern Europe with this article. They are supported in their endeavor by the low cost of transportation, both by railway and sea and river steamers; in consequence of which Russian wheat is offered at a very low price.

All these circumstances cause a constant increase in the export of wheat, from Russia into Italy, South Germany, and Switzerland, via Genoa, Marseilles, Antwerp, and Rotterdam; so that this country is now almost entirely supplied with Russian wheat.

The freight of wheat from Odessa to any one of these ports is from 25 to 40 cents per 100 kilograms, and from Antwerp up the Rhine to Mannheim 16 to 18 cents; while from Rotterdam it is as low as 10 cents per 100 kilograms.

Statistics show that the export of American wheat has decreased while its production has been increased. There must, therefore, be a necessary fall in its price. What is to be done? In order to furnish an outlet for the surplusage, both its price and the cost of its transportation must be reduced.

Let American wheat exporters send a competent person to Europe, whose duty it shall be to study the wheat markets of England, Germany, Switzerland, &c., as well as the question of transportation of wheat from the ports of Genoa, Havre, Marseilles, Antwerp, and Rotterdam to the wheat centers of the interior, and form commercial connections with such centers, by offering a good quality of wheat, at least at the same price as Russian wheat can be purchased for. American wheat might be cheaply transported from New York, Philadelphia and Baltimore to any of the above-mentioned ports, either in freight steamers or in sailing vessels, or in both, and by judicious management it may regain the command of the markets of England, South Germany, and Switzerland.

THE KNEADING OF BREAD

Our contemporary, *L'Echo Agricole*, publishes an interesting opinion of M. Ch. Tonaillon, in reply to a correspondent as to whether kneading by machinery produces bread sour and hard to the taste, with a tendency to dry and harden more quickly than bread kneaded by hand.

In the course of his reply M. Tonaillon stated that he does not make any distinction between dough kneaded by hand and that manipulated by machinery of a good system, provided the workmen entrusted with the work are efficient. Indeed, kneading by no means contributes towards the intelligence of a man. The doughing machine is an instrument that only yields satisfactory results in proportion as it is worked and regulated by an experienced hand. If this state of things already exists in the bakery of our correspondent, the bad quality of the bread must be ascribable to some other cause than the kneading. The want of softness and tendency to dry too rapidly may arise from several causes:

1st. From a protracted fermentation, which diminishes the elasticity of the gluten, and does not leave it sufficient vitality to rise after turning.

2d. From the use of water too hot or too cold.

3d. From using an oven of low temperature, which is detrimental to the prepared bread, and having a bakery in which the bread is exposed to cold on being taken out of the oven.

4th. From the use of badly mixed flour, which always produces bread of a hard character, which crumbles away when it is stale, and the crumby portion of which breaks into a kind of sand in the mouth, which is swallowed with difficulty. This is the defect of English bread. In order to digest this, it must be cut into very thin slices, which are generally covered on both sides with butter. In this state the bread reaches the stomach, but without having undergone the first stage of digestion which imparts to well-made bread the moment it mixes with the saliva a sweet sugary taste, which induces people to eat it with pleasure without wishing to leave off eating.

Bread is a nutriment apparently specially intended for man, as he is the only being whose saliva possesses properties for saccharifying starch. This change even takes place spontaneously in the mouth, but only in the case of bread made from mixed flour. Flour of a gritty nature, which the English call "strong," only produces a watery and insipid kind of bread, to which the French could never get accustomed.

The preference for mill stones dressed by means of the diamond has been more general than that for roller mills.

In the meantime we should advise bakers to always give the preference to mixed flours, by which means they will avoid the objections complained of.—*The Miller, (London).*

THE ANNUAL BANQUET OF THE GEO. T. SMITH MIDDLINGS PURIFIER CO.

THE GEO. T. SMITH MIDDLINGS PURIFIER COMPANY gave its customary annual dinner on New Year's evening to its traveling salesmen and principal employes at the Hibbard House under the direction of Major Clark. To say that the affair was elaborate and that it fully met the expectation and desire of those most anxious for its success but feebly expresses the facts of the case.

The *menu* embraced all that was desirable on such occasions and from its exhaustiveness one would judge that no one was more familiar with the wants of a critical and habitually well-fed company than Major Clark. Everything was presented in the most beautiful and appropriate style, the wines were of the best brands and flowed as freely as water, thanks to the liberal and congenial officers of the Smith Middlings Purifier Company and the efficient manner in which their directions were carried forth.

There were between forty and fifty plates laid and all were occupied and enjoyed.

John E. Winn, the youngest representative of the firm, was selected to present to Mr. Geo. Sherwood, the superintendent, in behalf of the officers of the company, a beautiful and expensive Elgin watch as a token of the latter's appreciation of Mr. Sherwood's valuable services and faithfulness and of the economical manner in which he had administered the affairs of his department.

Mr. Sherwood was completely surprised and almost overcome by his emotions, but arose to his feet, tendered thanks and proposed a toast to the President and directors of the Middlings Purifier Company, to which Col. Rodney Mason responded in an eloquent and entertaining speech. He drew a graphic picture of the mills of our fathers and the improvements wrought by the introduction of the wonderful purifier. To Geo. T. Smith more than any other one man in this or any other country, was due the honor of the grand achievements found in the milling of the present. Col. Mason recited the most familiar difficulties the Purifier Company had in the early days of its history, the prejudice that existed in the minds of millers against improvements, and what they styled "new fangled hinges," and the great revolution which had been wrought. Those who formerly considered Mr. Smith a crank and his invention a "clap-trap," now blessed him and it as benefactors of their class. In the course of his congratulations to Mr. Sherwood, the speaker said: "I also have been a recipient of the generosity of the company we represent, but my present was a bigger

thing than a watch—it was a clock—and I feel that my gratitude is as much greater than Mr. Sherwood's as my clock is greater than his watch. While this is a very fine clock and of great intrinsic value, such value has no comparison to its value to me as an expression of the satisfaction of the Company with my services in the past, and it places me in a new position in my relations with the Company. Heretofore I have been as an attorney to his client; hereafter our relationship will be increased by that as of a friend to a friend, and feeling my interest in their success thus increased, if in the past my efforts to serve have been great, in the future they shall be greater, and what I have to do I shall do with all the might within me. This is no ordinary clock. It is no cook-oo clock, nor was it made in Waterbury, Conn. It has chimes that announce each quarter hour and a gong which sounds with cathedral tone the knell of the dying hours, and as its sweet music fades away, each hour my memory of the kind givers shall be aroused and my energies spurred to new activity to promote their success.

Col. Mason himself is entitled to no small credit for the wonderful change of sentiment in regard to the machines manufactured by the Smith Company, for in the opinions he advanced and the obstinate resistance he met, he no little contributed to the advancement of the machine. It is fair, however, to record that Col. Mason's opinions were not written or his learned and thoughtful arguments hurled at courts by him for the purpose of provoking discussion, but were the calm and deliberate opinions of an attorney who had made a careful study of the principles involved in the invention for which he contended. Happily all these discussions have been determined by the courts to which they have been referred and the Geo. T. Smith Middlings Purifier Company's machine stands to-day before the law as well as before the milling public as the only legitimate machine in this country for the purification of middlings. To say that Mr. Smith should thus have hit upon all the fundamental principles of a middlings purifier, but faintly expresses the astonishment and gratification of the milling fraternity.

As a representation of the interest American millers feel in the improvements engendered by the Geo. T. Smith Middlings Purifier and Centrifugal Reel, Mr. Jno. R. Reynolds, head miller for H. A. Hayden & Co., responded to the toast: "The American Millers." While paying tribute to the homely and faithful picture presented by Col. Mason, he gave his own experience in milling and the objections he had to overcome from the head miller in charge of the mills in which he was employed when the purifier was first presented, and recited the almost miraculous achievements accomplished by its introduction, not only in the mills which he now superintends, but in all the intelligent milling world. Mr. Reynolds in part attributed the success of this company in holding its usual business in this exceptionally dull time by their readiness and generosity in adopting and applying all improvements to their machines—come from whatever source and cost what it may—until they had succeeded in offering to the trade an article which had no equal for the purposes for which intended, and added the old saying that there is lots of room for trade on the top shelf, but none on the second or third below.

Hon. W. K. Gibson being called, responded in his usual happy way, referring to the former annual dinners which he had had the pleasure of attending, replied in a jocular way to the feeling remarks made by Col. Mason in thanking the company for the elegant clock presented him. Mr. Gibson said he had no cook-oo at his house, and he would consider it in order whenever the company thought proper to recognize him in that way. He referred to the advantages the city of Jackson derived from the company's business, the wonderful extent of it and its phenomenal growth in this country as well as abroad. Even now, when almost every other firm is complaining of hard times, reducing their capacity, curtailing their expenses and business—many of them closing their shops entirely—this company not only finds itself able to run to its full capacity but finds it necessary to enlarge their works, increase their force and are behind their orders. He referred to a conversation he had had with one of the officers of the company in which he learned of their large trade in Europe, and the necessity they had found for detailing Mr. Myron W. Clark from the work he has so long and successfully been engaged in here and sending him abroad to take a general supervision of their European trade. He supposed one reason why they selected this gentleman was because of his extreme modesty and inconsiderate proportions. He presumed the scheme of the company was to send some one who would not attract attention or speak except when spoken to. Mr. Gibson referred to the great improvement in the business since Geo. T Smith took its management, and to the improvement in the appearance of the men he now saw at this dinner as compared with former years; gave them their full share of credit for this condition of affairs, and congratulated the president and officers of the company, in the liberal policy which had surrounded them with such talent and ability.

Toasts were proposed and responded to by Clark, Colwell, Col. Dickey, Harmon, Winn, and others, and at midnight the company dispersed, each and all delighted with the elegant and sumptuous entertainment received, and with redoubled resolutions to acomplish more in the year just born, than was done in that just dead.—*Jackson Patriot.*

GLUTEN TESTS FOR FIXING VALUES OF WHEAT.

[From address of Prof. F. Noble, before the Natnralists' Association, at Madeburg, Germany, Sept. 30, '84]

In judging the values of wheat flour it is well known the baker lays the greatest stress upon baking qualities, that is, those qualities which ensure a porous, light and ample product. These qualities depend upon the proportion of gluten and its elasticity.

The quantity of gluten obtained by careful washing out of wheat flour varies from 15 to 40 per cent., 28 being a good average. A flour from which no gluten can be washed out is seldom found.

Gluten in different wheats differs much in mechanical attributes. Millers make the distinction of "short" and "long" gluten according to the tenacity, the "short" having poorer baking value.

While quantity and elasticity of gluten determine the value of flour, it can not be said that the maximum of elasticity insures the richest flour or greatest working adaptability. On the contrary bakers claim that such flour makes hard, dense bread, a medium quality being most useful. However, the market value of a wheat depends upon the degree of tenacity of the gluten of the flour made from it, the latter being usually mixed for baking, with inferior products.

The different mechanical properties of gluten depend upon the make-up of its nitrogen constituents. Of these, gliadin (vegetable glue), mucedin (vegetable mucous) and gluten caseine (vegetable caseine) give it elastic properties, while gluten fibrine, according to H. Ritthausen's experiments, is very brittle, and causes marked deterioration. The vegetable albumen is washed away with the starch. At least, we continually observe a loss of nitrogen in washing out the gluten as compared with the original product, which has not yet been closely subjected to experiment.

This and other points offer matter for consideration, which in part they have already received. Independently of that, however, we can do service to agricultural workers by stating that we have found it possible in our experiments to secure approximately the same amount of gluten of similar elasticity from two tests of a certain flour.

The aleurometer, a small brass cylinder, is supplied with 7 grams (6¼ oz. avoir.) of washed out gluten. This cylinder is placed in a larger one, which is immersed in an oil bath in a copper kettle. In this manner the gluten is subjected to a temperature of 200 degrees C. for a period of 20 minutes. The quality of the gluten tested is shown by the height to which it rises in the cylinder.

The practical value of the aleurometer is evident. In it the farmer would possess an exact measure of the value of the wheat which he sells, while to the miller it is equally important. Different prices are paid for wheat according to its quality, baking properties being a matter of first consideration. Values vary 20 per cent. or more in the markets, being determined by color, form and variety of the grain. The floury, copiously yielding English wheat, for example, is less valued than the glossy Hungarian and South Russian sorts which are rich in gluten. But the variety alone should not be regarded as deciding the adaptation of wheat to milling purposes. Soil, fertilizers and weather influences the worth of grain favorably or unfavorably in a great degree.

"Square-head" wheat, grown in Saxony in 1882, and tested at the experimental station in Tharand, exceeded in gluten contents to an astonishing degree the ordinary value of that variety. This was also the case with the Australian "pearl" wheat cultivated experimentally at Tharand by order of the minister of the interior.

AMERICAN VS. FRENCH FLOUR IN THE CANARIES.

REPORT BY CONSUL H. B. M'KAY, OF TENERIFFE.

Although my consular district has at all times produced more or less wheat, the local millers, through want of proper appliances, could not make a bright fine flour free from bran that the demand called for in the best qualities of bread.

French flour many years ago began to supply the need, and Marseilles millers have since found these islands one of their best customers.

A fortnightly line of steamers kept the market constantly supplied with a fresh article, under circumstances against which neither Spain nor the United States could compete.

The want of success with Spain consisted in the high rates, owing to the excessive tariff there at which the peninsular farmers met a ready sale for their grain. The United States flour, however, was practically excluded from the local demand by other causes, which I proceed to set forth.

This should be prefaced by the observation that all bread is eaten cold, and is universally supplied by the bakers, no one pretending to make bread in their kitchens. This threw the selection of the flour into the hands of the bakers, and they looked up a quality that would admit as much water as possible to give weight, and which also admitted a good amount of yeast, which made the loaves, which are of two or three uniform sizes, appear larger, and thus more satisfactory to the public eye.

The bakers have pretended that American flour does not meet their wants in the above particulars, and although there has been some flour imported from time to time, from New York, the amount has never reached one-fifth of the quantity received from France.

I have long been convinced, however, that the difficulty with American flour does not consist as much in the quality nor in the price as in the difficulty of keeping bakers regularly supplied with an article of an even quality, which advantages Marseilles has enjoyed, because of her periodical steamers, and because the millers there take pains to keep certain grades of flour always on hand.

The public have of late years looked suspiciously upon this French flour, and have favored the American article so far as their means allowed.

This has caused the bakers to look upon the kind last named with favor, and as Marseilles is now, owing to the cholera raging there, entirely shut out of this market, I hear of large quantities of flour expected from the United States, and have no doubt that the result will be a permanent increase in the consumption of our flour.

The want of constant periodical communication, however, will always work against the American article, and until a line of steamers is established we should not look for permanency in that trade.

From importations made during the last five years, I calculate that if the French article from any cause could be replaced by American flour the consumption would amount to at least 2,000 pounds per month, for this province, after allowing for a liberal consumption of the native article.

Besides flour, our exports under careful manipulation of parties acquainted with the needs of the people here, could no doubt be increased in leather, soup-pastes, soap, and various other articles of which France has enjoyed almost a complete monopoly.

I have but little doubt that, if our products could once gain a footing, and constant, regular communication could be relied upon, we could hold our own against all comers.

THE ESTIMATION OF GLUTEN IN FLOUR.

BY WM. FREAR, WASHINGTON, D. C.

In determining the value of various flours, the most potent factors are the quantity and condition of the albuminoids. The great influence of the latter factor upon the products of baking is often overlooked.

But in noting the effect of "ageing" upon many varieties of flour, its importance is immediately seen, for in this case both fresh and old samples contain about the same quantity of albuminoids, while the latter sample frequently loses quite appreciably, and sometimes altogether, the condition which makes the formation of tough, spongy dough possible; consequently the baking products from fresh and "aged" flour made from grains equally valuable in the fresh state exhibit widely contrasted qualities.

In recognition of the importance of the nitrogenous constituents of flours in their relation to the "nutritive value," there have been devised for their estimation several simple methods capable of use without technical skill, and with very simple means.

These methods may be classed as chemical and mechanical. The former are generally volumetric processes, based upon the coloring action of nitric acid upon albuminoids, and therefore serve only to give an idea of quantity without regard to condition.

In the mechanical process, on the other hand, the steps taken are very similar to those adopted in the preparation of flour for baking.

This process depends upon the insolubility and coherency of the albuminoid particles of dough when in proper condition, and it consists essentially in kneading in water the stiff dough made from a given weight of flour, until the starch and soluble matters are removed, and weighing the residue. The gluten, as this residue is termed, does not exist in this state in the flour, but is formed very rapidly upon the addition of water. The nature of this change is not fully understood, but it is generally regarded as a kind of fermentation, due, according to Weyl, to the presence of an unorganized ferment, which he terms "plant myosin."

The process in detail is as follows: Weigh out 20 grams of the flour to be tested, or if a quite delicate balance is not at hand, a sufficiently large quantity may be taken to diminish the error due to lack of delicacy in the balance used. The flour must be carefully worked into a stiff dough by the addition of 50 to 75 per cent. by weight of water. Some chemists specify 50 per cent. invariably, but as securing a close similarity in the physical character of the dough with different samples is of the first importance, this rule is not to be commended. With duplicate tests, however, the same quantity of water should be used. The preparation of the dough may be considered complete when it is smooth, perfectly homogeneous and without particles of dry starch on its surface.

Many authors recommend that the kneading in water shall follow immediately after the preparation of the dough; but since gluten seems to be a fermentation product, its quantity is affected by the duration of fermentative action. For a long time this point was not subjected to experiment, but recently Bènard and Girardin have found quite an appreciable increase in the quantity of gluten during the period between thirty minutes and three hours after the preparation of the dough. My own experiments, however, indicate that, practically, the action is complete at the end of an hour; accordingly the dough is allowed to stand for this time previous to the separation of the starch, etc.

This separation is effected by kneading the dough by hand under a fine stream of water from a faucet or in a dish; the wash water is passed through a fine linen cloth, which prevents the loss of loose gluten particles; the operation continues until the water ceases to be clouded by the separating starch. The ease and quickness of this part of the process depend altogether on the coherency of the gluten.

The "gluten" is then freed as far as possible from the water by pressure in the hand, and weighed. The water contents of this "moist gluten" varies generally between 60 and 70 per cent.; but the difficulty in observing uniform conditions of pressure gives rise to inexactness, and makes the determination of the "dry gluten" advisable, when possible.

By reason of the hygroscopic nature of gluten, the process of drying is quite difficult. Partially drying, pulverizing and then drying to constant weight, which some recommend, can be accomplished without loss only by great caution. Allowing it to stand for five or six days in a steam oven completes the drying quite thoroughly, but the long period required is objectionable.

Allowing it to remain over night in a steam oven, and then heating it in an air bath at 100°–120° C. for five or six hours, gives results closely agreeing with those obtained by the other methods, and is much easier and quicker.

The wash water from the dough contains a considerable quantity of soluble albuminoid matter, so that the gluten does not contain all the albuminous matter of the flour; but, on the other hand, it contains in the dry state a large amount of impurities—according to Richardson, about 25 per cent.—and this ratio is quite constant. So that practically, with good flour, the quantity of crude gluten is about the same as that of the albuminoids estimated by the most exact chemical methods, rarely varying from it either way more than 1.5 per cent. Good flours should contain from 9 to 14 per cent., though a fair flour from the Pacific coast may fall below 9 per cent. With poor flours, however, the gluten may fall far below the amount of albuminoids, and their small value is shown by its not reaching the proper percentage.

The physical qualities of the gluten, also, are of value in determining the quality of flour. In the moist state it should be of a light yellow color, and in structure homogeneous, plastic, elastic and with a very considerable degree of consistency. Adulteration, molding or other changes, under which the quality of a flour deteriorates, will, whether quantity be affected or not, very markedly impair the above mentioned qualities of the moist gluten, and consequently all differences, as well as those of quantity, must be considered in the final conclusions touching the relative values of different samples.—*Druggists' Circular.*

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MILWAUKEE, FEBRUARY, 1885.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for ($10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 200 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,500 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and 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 we find the record as follows; British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scotia 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,500.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 58.

MILWAUKEE brewers sold 176,587 barrels of beer during the year 1884.

THE fire loss in the United States and Canada for 1884 is estimated at $112,000,000.

BROTHER MITCHELL, of the *American Miller*, made us a pleasant call on a cold day in January.

THE Dominion of Canada imported over 300,000 barrels of flour in 1884, and Canadian millers are urging a doubling of the import duty on flour.

THE nine flouring mills in Detroit, Mich., made 249,914 barrels of flour during the year 1884, of which 153,312 were shipped, and 96,602 sold for home consumption.

THE U. S. Treasury Department has issued an order allowing payment of drawbacks on flour sacks to exporters of flour. This will prove quite a saving to large exporters.

THE Baltimore *Manufacturers' Record* says that 1865 manufacturing enterprises were organized in the Southern States during the year 1884 with an aggregate capital of $105,000,000.

A SYNDICATE of Canadian capitalists with a capital of $4,000,000, it is reported has been purchasing large quantities of wheat in Manitoba recently for shipment to Montreal via Pt. Arthur, as soon as navigation opens.

WM. TRUDGEON, of the Richmond Mfg. Co., Lockport, N. Y., came up to Milwaukee recently from Nashville, Tenn., just in time to make connections here with a Manitoba wave. He reports business fairly good in the South.

THE hominy millers of the United States met in convention recently, in St. Louis, and organized the Hominy Millers Association, of which Geo. J. Heilman, of Evansville, Ind., was elected president, and Geo. N. Flannagan, of St. Louis, secretary. There are about 100 hominy mills in the United States, and it is expected that all will join the organization, as it will undoubtedly prove beneficial to their interests.

MILLERS contemplating the making of changes in their mills, adding new machinery or building new mills, cannot find a better time to make contracts than at present. Every thing seems to have reached bottom prices, and many things have already advanced in price.

WE have received a handsome copy of the 1885 Catalogue and Price List of Flour-mill Machinery and Engines, just published by Messrs. Edw. P. Allis & Co., of Milwaukee. It contains about 240 pages, and its contents are of great value to flour-mill owners, who will be furnished with copies upon making application to Messrs. Edw. P. Allis & Co.

JOHN D. NOLAN concludes his address to the Pennsylvania Millers by saying:

"At the present time among those who have given rolls a thorough test, the following will be found the main rules laid down and followed by their most earnest advocates. 1. Reduce the wheat on break rolls made of chilled iron. 2. Reduce the middlings on smooth iron rolls or porcelain rolls. 3. Reduce the clean middlings by means of buhrs. The modifications of roller milling in mills making from 150 to 500 barrels a day, with the retention of existing machinery, will facilitate conversion of old mills into modern milling plants, but it is not advisable in small mills. A first break and brush scalper, in connection with the buhrs and a pair of bran and middlings rolls, will make a much better flour when the wheat is thoroughly cleaned."

HARRY S. KLINGLER concludes his article on "The Future of Milling," as follows:

To summarize, the perfecting of systems of milling aiming to produce the highest grades of flour and the largest yield that human ingenuity, skill and application can accomplish; the adoption of the most economical means in the manufacture of flour, seeking to obtain a barrel of flour at the least possible expense; the survival of the fittest, crowding into the background or out of existence entirely, mills that cannot attain to the high art, or mills not favorably located as to the supply of their material or the sale of their product; these will be the direct results of increased production and a further development of the art of milling, with no prospects of a greatly enlarged demand for flour, and can be accepted as the natural consequences of the present condition of the milling industry, as foreshadowed by the signs of the future.

CORRESPONDENCE.

[From J. D. Hurst & Son.]

AURORA, Oregon, Dec. 15, 1884.

Editor United States Miller:

The general view of the grain and milling business of Oregon is not very flattering at this time. There is a general want of export demand, which we here so much depend upon in order to be successful, as this is a great wheat producing country, and the consumption at home is very little.

Five of our largest export mills are not running at all this season, and those that are running are forcing the home market and are necessarily running on small margins, and the out-look for the future is not promising unless the export trade should become better. There is plenty of good milling wheat in the state, but farmers are not free sellers at the present low prices, and only sell as necessity compels them. Wheat is now selling at $1.07½ to $1.15 per cental in the Portland market. Millers' wages are not as good as they have been, but still they are better than circumstances would permit.

In 1883 there were quite a number of new mills built, and some old mills remodeled to the Gradual Reduction System, but during the past year but very little has been done in that line, and the prospects for 1885 all depend on the export demand for our breadstuffs.

In Eastern Oregon and Washington Territory there are a few new mills being erected in different localities, principally for custom work. What we mostly need in Oregon is an increased population and capital to work up and utilize our raw materials, of which we have an abundance of nearly every thing that any country can produce, and a climate that cannot be excelled. There is just now, a considerable talk about diversified farming in the Eastern States, and we think the Oregon farmers need it bad, as they seem to have the the one-crop craze, (wheat), and we import butter, cheese, eggs, bacon and lard, when there is no country under the sun that can produce these things better than Oregon. But we think the low price of wheat this season will bring about a change and will open the eyes of the farmer.

Yours, very truly.

J. D. HURST & SON.

THE SMITH PURIFIERS IN EUROPE.

Curious to know of the progress being made by the Smith Purifier Company, and its foreign relations, a *Patriot* reporter visited the works recently for the information desired. He found Mr. M. W. Clark disengaged and enquired of him when he was to sail for Europe. He replied that it was expected he would be able to get away some time during the month of April. Before going, Mr. Clark, with Col. Mason, the attorney for the consolidated company, are obliged to visit California to take evidence in the infringement suit now in progress against the users of the Case purifier.

Reporter—I supposed, Mr. Clark, that the company had conquered all opposition, and had no more trouble about infringements.

Mr. Clark—We have, generally speaking. Occasionally a small concern will spring up, gathering together the several devices of other inventors, and among the rest that of our company, and claim it as an invention to combine parts of other people's property, offering their machines to the trade, and find occasionally a customer not familiar with the merits of milling machines, thus necessitating an action being brought to compel them to respect our rights and protect the millers against further imposition. These concerns offer their guarantees as security for the users, first carefully providing for an emergency by so arranging their affairs as to enable them to beat an execution in the event of judgment being obtained. This was fully illustrated in our Canadian business. When we came to collect the royalties due from millers as users, not a single case came to our knowledge where the manufacturers made good their guarantee—lots of guarantees, but not a cent to make them good.

Reporter—What is the nature of your business in Europe?

Mr. Clark—Our business there has been rapidly increasing since Mr. Smith introduced our machines about four years ago, and has been neglected so far as the company's personal attention is concerned, notwithstanding which it has grown to such an extent that it now absolutely requires careful personal attention from some one connected with the company who is thoroughly familiar with the milling process adopted here.

Reporter—Have you any objection to giving me some information as to the extent of your business abroad, and to what countries you are now shipping machines?

Mr. Clark—I have no objection whatever. You can look at our order book which will show you our trade for the last three weeks.

The reporter was then shown the order-book by Mr. George Sherwood, superintendent, and among the large orders received within the time mentioned by Mr Clark, noticed the following:

Germany	75
France	26
Argentine Republic	7
Italy	13
Moscow, Russia	7
Australia	50
England	70

Reporter—Mr. Clark, what is the average number of machines manufactured by the company per week?

Mr. C.—I am not sufficiently familiar with the shipments to give you a correct reply, but think last week was not an unusual week. when our shipments amounted to 84 machines.

Reporter—How are you enabled to manufacture and send abroad machines complete? I should think freights would be so high as to prevent it.

Mr. C.—As you passed through the shops you noticed the complete and systematic organization of our forces, and the conveniences for easily handling this class of work. You also undoubtedly noticed the high grade of all our special machinery for manufacturing. This enables us to manufacture more cheaply this high grade of work than competitors who are manufacturing in a small way could possibly do. Our reputation has been made, and our trade secured by the completeness of each separate machine sold in the market. This has been Mr. Smith's special ambition, to build a machine so good that no competitor could afford to build it for the money the company sell them for, even were their rights under the company's patents secured to them.

Thus terminated the interview with Mr. Clark. But the reporter was forcibly impressed with his closing reply, and could not help but think that, if all so-called monopolists would manage their business on the same principles adopted by this company, no reason would exist for complaint against this class of manufacturers. After visiting the various departments of the establishment, seeing the large number of men employed, the vast amount of material consumed, the reporter was also most forcibly impressed with the great benefit which all classes in Jackson derive from this prosperous thriving and constantly growing enterprise.

Mr. Clark, who is an old resident of Jackson, has been connected with the company in an important position for many years, and his selection as the manager of the European business is evidence of the high esteem in which he is held by the company. He with Col. Mason will leave for California in a day or so, and as soon after his return as practicable, he will take his departure for Europe. —*Jackson (Mich.) Patriot.*

A RATIONAL VIEW OF BOILER EXPLOSIONS.

When the cork of a soda-water bottle is set free it escapes with considerable violence and noise. It behaves in a manner like a projectile shot from a gun. There is this difference, however, between the projectile and the cork—that the whole of the projecting work must be done on the latter after it has left the neck of the bottle. In the case of a gun, the work is done on the shot while it is moving up the barrel and acquiring velocity. The motion of the cork is extremely slow until it escapes from the bottle. The motion of the projectile from the gun is most rapid at the moment it leaves the muzzle. We have a strict analogy between the flight of a soda-water bottle cork and that of a bit of boiler plate. The cast iron top of the dome of a locomotive was a few years ago blown through the roof of a station. All the bolts securing the dome top gave way, and it sailed through the air some hundreds of feet.

Now, it is very easy to say that the flight of this mass of cast iron is readily explained. "It was blown into the air." "It was violently forced off by the steam." "The steam shot it off," and a dozen similar explanations may be given. But engineers do not rest content with vague statements of this kind. They see that the cast iron must have been put into very rapid motion indeed in a very minnte fraction of time, and they want to know how the motion was actively impressed on it. As soon as we begin to use figures, we discover that vague generalities really convey no adequate idea at all of what takes place.

Let us suppose, for the sake of illustration, that the cast iron dome was 18 inches in diameter, 24 inches area, and that it weighed 100 pounds. Also, we shall assume that it was projected to a height of 100 feet. In order that it should attain to this altitude, it must have an initial velocity at least as great as that which it would acquire if it fell 100 feet. Allowing a little for the retarding influence of the air, the initial velocity must have been 82 feet per second. The boiler pressure being 120 pounds on the square inch the total effort lifting the dome would be 30,480 pounds. We have, therefore, a force of 30,480 pounds, a velocity of 82 feet, and a weight of 100 pounds. Through what space must this force operate on the weight? A very simple calculation suffices to show that the force of 30,480 pounds must act through a space of about .32 of a foot. It will be seen from this that the steam must have exerted its full pressure of 120 pounds on the square inch until the lid of the dome had beed parted from it by a distance of about 4 inches.

In boiler explosions the same thing happens. The pressure follows, so to speak, the flying fragments for a certain distance after disruption takes place. In the same way, the column of escaping carbonic acid gas rising from the neck of a soda-water bottle imparts a high velocity to the cork after this last is quite free of the bottle. It is in this way that the projection of fragments to a great distance is brought about, and we do not think it necessary that water should be called into play for the mere projection of portions of the plates. As we should state the case, the phenomenon of a boiler explosion would be somewhat as follows: First, rending takes place through a weak joint or corroded plate; secondly, there is a violent outburst of steam; thirdly, there is a fall in pressure; fourthly, portions of the water are propelled with great violence against the boiler shell, which is shattered thereby; fifthly, the steam generated from the liberated water imparts, in the way we have tried to explain, high initial velocities to the fragments, converts them into so many projectiles, and spreads ruin around.

The point worth special notice about all this is that the steam keeps together, so to speak, and does not escape by fissures or cracks. It might be thought that the moment the steam dome cover, which we have already used for the purpose of illustration, was raised at all, the steam would all rush out sideways, and that the cover would be projected but a few feet. This is not the case; the steam does not diverge to the right or left; its molecules advance, each in a straight line, behaving like a minute projectile; and this columnar advance of a gas, free to diverge right or left, but going straight on, is the main cause of the violence of boiler explosions as manifested by the flight of fragments to great distances.—*London Engineer.*

TWENTY STATEMENTS ON MODERN MILLING AND MILL MACHINERY.

BY J. M. CASE.

There can be found in almost every issue of the milling journals, old-fashioned fellows who still cling to the antiquated system of stone milling, and make grave prophecies of the speedy return to the good old burr. Such articles are misleading and ought not to be admitted to a place in any first-class milling journal.

There is nothing more clearly demonstrated than the fact that burrs, for manufacturing flour, have fulfilled their mission. It is equally clearly demonstrated that rolls are superior to all systems of milling so far developed, and discussions in milling journals should be how to improve and perfect the best known system, or how can we evolve something better, rather than shall we return to the antiquated and abandoned systems of the past.

Taking this view of the subject, I wish to present a few thoughts, condensed into simple conclusions, which my experience in the erection of mills and milling machinery has led me to during the recent revolutions in milling.

1. Milling consists essentially in granulation and separation. That system which will reduce the wheat berry to flour with the least intermingling of the branny fiber, or germ product, and at the same time keep up the proper granulation, is necessarily the best system.

2. In burr milling there are an innumerable number of fine particles of bran intermingled with the chop, in such a manner that no system of bolting, or re-bolting, can ever remove them. This is due to the abrading action of the millstone. No further statement need be made to answer all the sophistry ever written in favor of stone milling.

3. Next to a perfect reduction of the wheat to middlings, a correct system of separations is most important. This science, if it can be called such, may be summed up in three distinct principles. First, remove all coarse stock before making flour. Second, make no returns. Third, don't let good middlings or flour reach the tail of the mill. The first proposition is essential to get clear flour; the second, to prevent the accumulation of impure material; the third, to prevent a large percentage of low grade. This covers the whole field, and the intelligent programmer who can carry it out with the least possible machinery or bolts is the best expert.

4. "Seam-dirt" does not grow in a wheat berry. Hence, the advantages hoped to be gained by splitting the wheat through the seam and sending the half berries to a millstone are often delusive. The brown flour obtained from the first break is due more to the scouring action of the break machine and scalper than to any deposit in the seam.

5. The best first break machine is a roll with two corrugations to the inch, breaking against a stationary, smooth surface. A stationary surface is preferable to a movable one, owing to the fact that it does not crush or soften the berry so much.

6. The best corrugations for the breaks are two, eight, twelve, sixteen, twenty and twenty-four; the first three breaking against the back of the teeth and the last three front, cut saw tooth.

7. Roller mills, like sewing machines, are very similar in construction; differing mainly in the feed and adjustments, nearly all having adopted nearly the same standard corrugations, hence all will do good work; but some are more complicated than others; some have a less effective feed than others, and hence, require more looking after, and are liable to make more uneven work and less perfect finish.

8. Some of the essential features of a roll are as follows: The roll should not depend upon the spring to keep it from running together when the feed runs out. The set should be positive. It should automatically shut off its feed before the roll stops. This will save throwing the rolls apart, and consequently a saving of unground wheat as well as labor. Millers do not know how much is lost by throwing the rolls apart every time the mill stops. I offer this hint for the benefit of manufacturers, as well as millers. They will eventually be compelled to recognize these important features.

9. A purifier is simply a machine calculated to cause a current of air to pass up through the middlings. An old wheat bin forty inches wide and ten feet long, with a shaking riddle applied, and a fan to produce a suction or blast, will make just as good a separation as any machine ever made, so long as the cloth is kept clean.

10. All sub-divided compartments, pockets, combined suction and blast, are of no practical utility, but a positive detriment in the construction of a purifier.

11. A suction and a blast fan are the same in their operation upon middlings. In the one case there is a minute reduction in the density of the atmosphere above the riddle; in the other case there is a trifling increased density below the riddle. This unbalanced condition causes a current of air, and this current will act precisely the same, whether there be a decrease or increase of the normal density of the air. This thought borne in mind will save inventors many foolish experiments.

12. An octagon or ribbed centrifugal reel will bolt more freely and the cloth will keep cleaner than round or cylindrical centrifugals. The reason of this is two-fold: First, the ribs carry up the stock and drop it upon beaters in large quantities; and second, there is a dead air chamber between each rib which permits the material in motion to reach the cloth more freely. A six or eight-ribbed reel will generally bolt all round, while a round reel will generally bolt only on opposite sides. predict that the hexagon or octagon reels will eventually be universally adopted.

13. Centrifugal reels are best calculated to handle the cut-offs and low grade stock at the tail of the mill. They will make a good separation on any class of stock which has been scalped through cloth nor coarser than No. 9, but no better than the old-fashioned chest, while they are more troublesome and require more power; hence, they are not to be recommended for first bolting.

14. Burrs should not be used to reduce any class of material in a mill, except perfectly clean middlings, and even for this purpose rolls are the superior. Few millers will keep the burrs in perfect condition. It will always pay a miller in changing over to make a full roller mill.

15. Scratch rolls will reduce more middlings than smooth, and are less liable to heat or cake, and will generally make a closer finish; but smooth rolls make a whiter flour, and if a sufficient number are used they are preferable.

16. The number of breaks to do good work depends largely upon the quantity of material, to be operated upon. A five-break mill with light feed will make more middlings than an eight-break mill over-loaded. Millers generally estimate on too little grinding surface for their break rolls to make the best granulation. Six breaks is enough under all circumstances, provided the rolls are of sufficient size for the work desired.

17. The proper speed for a nine-inch roll is 350 revolutions per minute; for a six-inch roll 500. It is preferable to run at a higher speed, rather than be limited, in breaking or flouring capacity.

18. Sharp corrugations for the breaks will make more sub-tails or small pieces of broken wheat, and the break chop will look browner than that made on smooth or rounded corrugation, but at the same time the sharp corrugations make more middlings and of a firmer, better condition, which will purify with much less waste in the dust room, the break flour is more granular, more patent can be made, and the g neral results are decidedly in favor of a sharp corrugation for the five-inch and six-inch breaks. This has become recognized, not only in this country but all over Europe.

19. Porcelain rolls make an excellent reduction on middlings, but it requires twice as many of them as scratched rolls. They require skillful handling to keep from injuring the grinding surfaces.

20. A 25-barrel roller mill can be made to do just as good work as a mill of 5,000 barrels capacity, and just as economical as to quantity of wheat, low grade, etc. It costs the small miller more per barrel to manufacture his flour than the large one, but if the small miller has a local trade sufficient to keep his mill running he will get better prices for his flour. It is a fact that first-class small mills are making more money in proportion to their investment than the larger ones.

These propositions I have given off-hand as they have occurred to me. I am aware there are those who will take opposite views to many of these statements, but they are honestly made and are the result of several years experience in mill building.—*American Miller.*

THE FUNNIEST RAILWAY YARN YOU EVER READ.

LIVELY TIMES IN A SLEEPING CAR.

"It seemed as if the devil had broken loose among our passengers last night," said the conductor of the sleeping car to two of his comrades, as he sat twirling his blonde mustache in the restaurant opposite the depot. "We had the liveliest kind of a time pretty nearly all night. Oh, I could split my sides laughing when I think of the two Dutchmen, the nervous man and the old dame in berth No. 10. Then there was the bald headed man, too. Ha, ha!

You want the yarn, do you? Well, I'll begin by telling you that we had a big load—that is, a big load of passengers. We were so full that in several cases we made two friends occupy the same berth. The first incident that occured to make things lively was a row, or, rather, a sort of outburst of popular indignation against that pest of the sleeping car, the restless chatterbox. It was a little after eleven o'clock, and we were bowling along at the rate of about forty-five miles an hour. Most everybody had retired to their berths and were trying to get to sleep.

They were seriously disturbed in this attempt by a couple of German fellows, who occupied upper berths close together, and who persisted in jabbering away to each other. Had they talked German it would have been bad enough; but, like most foreigners who cannot speak our lingo, they chose to use English in preference to their own language. And never has English been worse maltreated than it was by those two fellows. As for the nature of their conversation, it was just of that kind which is calculated to put murder in the heart of the man who is compelled to listen to it. It was just about like this:—

"Du, Yustav!"

"Chaw."

"Kaun you schliep, you?"

"Haw?"

"Kaun you schliep, you?"

"Op I schliep kaun?"

"Yaw."

"Naw."

Or the talk might turn something like this way:—

"Du, Yustav!"

"Chaw."

"You know der Ludwig Pfaffenhimmelberger, der pig lager bier brewer, vot marriet der Lumpenfeiner's tochter?"

"Haw?"

"You know der pig lager bier brewer, der Ludwig Pfaffenhimmelberger, vot to der Lumpenfeiner's tochter marriet was?"

"Op I den Pfaffenhimmelberger know?"

"Yaw."

"Heem dot der lager pier prewer vas?"

"Yaw."

"Vot married den Lumpenfeiner's tochter?"

"Yaw."

"Nau, kenne nicht."

"Naw!"

"Naw."

It was about the fifty-ninth time that "Du, Yustav!" had been begun when suddenly the head of a thin faced man, with small black eyes and a big black frown, protruded from the curtains of a berth next to that occupied by Fritz. He was evidently a nervous man, and it was also evident that he was wrought up to the highest pitch.

"You dod-gasted Dutchmen, he cried, furiously, "who in the name of ensanguined Hades can get a wink of sleep with that infernal yaw-ing and naw-ing dinging in one's ears? It's worse, I swear, than two tabby cats on a housetop. You've kept it up long enough. Shut up, now, both of you, or I'll build a head on you as big as Pike's Peak."

Murmurs of approval of this threat came from behind several curtains in the immediate vicinity. For a few minutes there was quiet. But, presently, Fritz's voice was again heard.

"Du, Yustav!"

"Chaw."

"Vot vos it dot feller say apout der Bike's Beak?"

"Haw?"

"Vot dot feller der Bike's Beak apout say?"

"Ob I know der Bike's Beak apout?"

"Yaw."

"Naw."

"N—"

At this instant the curtains of the nervous man's berth flew wide apart and the nervous man sprang out on the floor. He stepped up to Fritz's berth. All the fury of his manner had disappeared and had been replaced by a sort of calm, cool, determined deliberation. There was a glitter, though, in his eyes which was not pleasant to look at.

"See here, Mr. Dutchman," he said very slowly and quietly; "it's a question of either you or I leaving this car. If this thing was kept up much longer there'd be a homicide here; that's what's the matter. Either you'd pitch out of the window or I would. Now, shall I murder you, or will you murder me? Which is it to be?"

After some little argument between Fritz and the nervous man the affair came to an end something in this wise:—

"Yustav, shall we stay hier to be mortered in der gombany's gar?"

"Op vee here stay shall und mortered be?',

"Yaw?"

"Naw."

"Den vee stay op und go schmoke a piper?"

"Op vee stay op und go schmoke a fifer?"

"Yaw?"

"Yaw."

A few minutes later, followed by withering looks from the nervous man, the two Germans were heavily plodding their way toward the smoking car.

For a time there was peace and quietude in the sleeper. The car lamps burned with a dim and yellow light as the train rushed through the darkness with a gently swaying motion. Scarcely twenty minutes had elapsed from the time of the Germans departure when suddenly a loud, piercing shriek rang through the car. In an instant curtains were dashed aside to make way for sleepy looking heads, all the attachés of the car who were on duty came running forward and the voice of the nervous man was heard raised in angry protest.

"In the name of a thousand furies," he cried, what's the matter now? Has the en-jine burst her boiler, or is it only somebody that's cut one of those infernal Dutchmen's throats. All this car needs is a throttle valve and a stretch of river to turn it into a first class calliope."

In the meantime the initial scream had been repeated several times with added energy and strength. The screams came from berth No. 10, from which could be seen protruding a pair of legs and the coat tails of a stout man. The colored porter seized these coat tails and asked their owner what the matter was. In reply there came a smothered voice, exclaiming:—

"There's a devil in my berth, and she's got me by the ears.'

This remark was supplemented by another shrill scream and an equally shrill female voice, which cried:—

"Take him away! take him away! the villain, the scoundrel!"

The porter squeezed his head into the berth and a moment later was heard saying:—

"Perhaps if you stop screaming ma'm, and let go of the gen'elman's ears, he may be able to get his-self out."

"Oh, the rascal! the villian!" cried the shrill female voice, "there."

At this moment there was an exclamation of agony from the owner of the legs, as if his ears had been violently wrenched, followed by an agitation of the coat tails. The next instant a bald head and a very red face were withdrawn from the berth. Glancing into the vacancy thus made we all perceived an elderly lady, thin and grim looking, and with her hair done up in crimps, sitting half upright in the berth. Beside her lay another female form.

Hastily throwing her shawl over her head and about her scraggy shoulders the old dame just opened on Mr. Baldhead for all she was worth. She called him a "mean, cowardly villain, a shameless old scamp, who insulted unprotected women." She said that he ought to be lynched, and would be "if there were any men that were men around." At last she was calmed down a bit and her story was got out of her. She was occupying the berth with her servant girl. She had been awakened by some one trying to get into the berth. She had at once seized the intruder by the ears and had called for assistance.

"And very effectually you did it, too, madam," remarked the nervous man. "Considering the disturbance that has been made, I don't know but what you're right in that there remark as to there being a call for a case of lynching in this car."

The baldheaded man protested. He told his story. He had engaged a berth which he was to occupy with his nephew. The latter had left him some time before to go to their berth, as he thought. He had just finished reading his book in the parlor car and had come in to go to bed. He thought he recognized this berth as his, and in the semi-darkness, it was impossible to distinguish the figure in the berth from that of his nephew. Just as he had put his head in he had been seized by the ears and the screaming had begun. He really thought that the devil had taken possession of him. Such a vicious and unreasonable old wretch of a woman it had never been his misfortune to come across before. And the old gentleman put his hand feelingly to his outraged ears.

What was the number of the gentleman's berth? No. 14. Oh, yes; that was two berths further up, and the porter took the old gentleman in hand and showed him the way. His nephew was not yet in bed? No; he had been in the car a few minutes before, and had remarked that he would join some gentlemen in a game of cards in the smoker. With an angry glance toward berth No. 10 the old gentleman clambered into bed.

It seemed that the elderly lady had some difficulty in getting to sleep after the excitement. Anyway, in less than half an hour after her encounter with the elderly gentleman she was seen to emerge from her berth and go forward, presumably bent on a visit to the icewater tank. Before starting out she loosely pinned a pocket handkerchief with a violet border to the curtains of her berth, so that she should have no difficulty in recognizing her resting place on her return. Hardly was her back turned when the two Germans, Gustav and Fritz, came blundering back to their beds. In passing No. 10 Fritz clumsily knocked against the handkerchief, brushing it away with his shoulder. It dropped on his arm, and after

being carried a few steps by him fell to the ground. In so doing it attracted Gustav's attention. He pointed to it, and Fritz picked it up and saw the the pin sticking in it.

"Where it belongs?" he asked of Gustav.

"Where belongs it?'

"Yaw,"

"Daw," replied Gustav, pointing sleepily to the curtains opposite which it had fallen.

In another instant Fritz had pinned the handkerchief with the violet border to the curtains of No. 14.

Five minutes later the elderly lady reappeared. She stopped in front of where the violet bordered handkerchief hung. She parted the curtains and with a chilly shiver crawled hasti y into the berth.

Fully twenty-five minutes must have elapsed after the Germans had sought their respective berths, when from No. 14 there came an unearthly, blood-curdling shriek, followed by angry exclamations in a deep bass. Again the car attachés rushed forward, again affrighted and sleepy heads appeared behind curtains, again was the voice of the nervous man to be heard upraised in flowing and prolonged outburst of profanity. The curtains of No. 14 were torn apart by the porter, and the elderly lady and the baldheaded man were found struggling desperately in each other's arms. With some difficulty they were torn apart and assisted from the berth. The elderly lady was speechless with rage; the baldheaded man was almost equally angry. He managed to get the floor first.

"I think I am in my own berth this time," he cried, "I have not moved from it since I got in. This is a conspiracy, I say. I shall sue this company for loss of character.'

"What!" screamed the elderly lady. "This your berth, you old villain? Where is that girl? Where are you, Mary Jane?"

"Here, if you please ma'am," answered the girl, her head protruding from the curtains of No. 10.

"What are you doing in that berth, you hussey?"

"Please, ma'am this is our berth. I have not stirred from it since we went to sleep."

"Sure enough," put in the porter, with a broad grin, 'that's your berth, ma'am, and this 'ere berth belongs to this gen'elman.'

"My berth—his berth—in the berth with a man—Mary Jane—Oh! Oh! He! oh!——"

And the elderly lady was in hysterics.

"I shall sue this company? repeated the baldheaded man with austerity.

"Sue this company? is it?" howled the nervous man, with dilating eyeballs. "Well, I should smile if we would'nt. Call this dodgasted den a sleeping car, do they? All that's needed here is a pinch of brimstone and a pitchfork to convert it into a first-class Inferno!"

The lull of silence which followed the nervous man's stormy anger was broken by two voices from the upper berths:—

"Du, Yustav, kann you schleep mit all dot noise?"

"Op I mit all dot noise schleep kann?"

"Yaw?"

"Naw!"

A HIGH TOWER PROJECTED AT PARIS.

The Washington monument may not long enjoy its pre-eminence as the highest structure in the world. An iron tower of the height of 1,000 feet is to be erected in the grounds of the French Exhibition in 1889. An elevator, the safety of which is guaranteed, will communicate with the summit, and visitors to the exhibition will be taken to the top for a small fee. Those who have the courage to make the ascent will enjoy an almost uninterrupted view for nearly 100 miles all round. The tower will also be utilized for astronomical and meteorological observations, for experiments in optic signaling for the investigation of certain problems in experimental physics, and for various other scientific purposes. It will, perhaps, be remembered that a tower of the same elevation was spoken of in connection with the Centennial Exhibition at Philadel phia but the necessary financial backing could not be had for the enterprise and the project was dropped.

WATER POWER FOR CITIES.

In London the plan of distributing water power in pipes for manufacturing purposes, running lathes, elevators, etc., is now in successful operation. The franchise is owned by the General Hydranlic Power Company. The water is taken from the Thames, filtered through sponge filters then forced through the pipes by steam power. There is a pressure of 700 pounds to the inch in the mains. The mains which now measure in the aggregate seven or eight miles, are cast-iron pipes six inches in diameter; they are cast in nine-feet lengths, and are tested to 2,500 pounds per square inch at the works. The joints are turned and bored spigots and sockets, and are made tight with gutta percha rings, the necessary pressure being obtained by 1¼-inch bolts passing through the lugs on each pipe. As each section is laid, the water is admitted to test the joints; and after that, if they are tight very little more trouble is experienced. Stop valves are inserted every 400 or 500 yards, and by their aid the position of a leak can be located within that distance, after which it is easily found. The financial success of the company is no longer a matter of doubt. Since January 1 of the present year, the amount of water delivered has increased 40 per cent. and would be much greater if all the intended consumers had their machinery in place. The charges for power are based upon a minimum payment of 25s. per quarter for each machine, and a sliding scale for the water, which is measured by meter as it is exhausted. In many cases the cost of lifting by the company's power is as low as a half-penny per ton lifted 50 feet high.

CHICAGO'S GRAIN TRADE.

Notwithstanding many untoward circumstances and a vast deal of discrimination against her, Chicago still maintains her position as the leading grain market of the world. A glance at the following table will show how the grain trade of the Garden City has increased in the last sixteen years:

Year.	Received, bushels.	Year.	Shipped, bushels.
1869	63,417,510	1869	56,759,515
1870	60,432,574	1870	54,745,903
1871	83,518,202	1871	71,800,789
1872	88,426,842	1872	83,364,224
1873	98,935,413	1873	91,597,092
1874	95,611,713	1874	94,020,691
1875	81,087,302	1875	72,369,194
1876	97,735,482	1876	87,241,306
1877	94,416,399	1877	90,706,076
1878	134,086,595	1878	118,675,269
1879	138,154,571	1879	125,528,379
1880	165,855,370	1880	154,377,115
1881	145,020,829	1881	140,307,597
1882	126,146,483	1882	114,864,933
1883	164,924,732	1883	141,720,259
1884	160,569,156	1884	142,496,933

Of the receipts in 1884, 27,960,340 bushels were wheat; 59,606,449 were corn; 37,553,209 were oats; 3,417,595 were rye, and 8,555,519 bushels were barley.

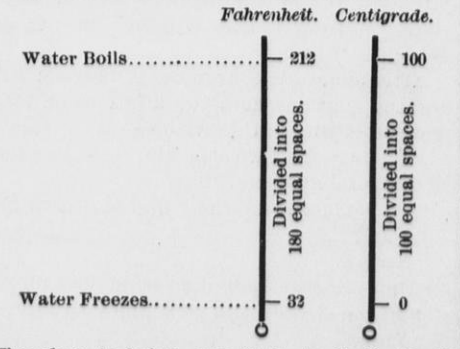
The annexed table gives the name and capacity of each of the regular elevators of Chicago. There are besides a number of private warehouses and elevators attached to manufacturing establishments; but how much capacity they represent cannot be definitely stated:

Name of Elevator.	Capacity, bus.
Central elevator "A"	1,000,000
Central elevator "B"	1,500,000
C., B. & Q. elevator "A"	1,250,000
C., B. & Q. elevator "B"	850,000
C., B. & Q. elevator "C"	1,750,000
C., B. & Q. elevator "D"	2,000,000
C., B. & Q. elevator "E"	1,000,000
Rock Island elevator "A"	1,500,000
Rock Island elevator "B"	1,250,000
Galena elevator	750,000
Air Line elevator	750,000
Northwestern elevator	600,000
Fulton elevator	300,000
City elevator	1,000,000
Union elevator	700,000
Iowa elevator	1,500,000
St. Paul elevator	1,000,000
Illinois River elevator	200,000
National elevator	1,000,000
Chicago and St. Louis elevator	1,000,000
Neely's elevator	600,000
Chicago and Danville elevator	350,000
Chicago and Pacific elevator	1,000,000
Wabash elevator	1,750,000
Western Indiana elevator	1,500,000
Seaverns elevator	900,000
Hess elevator	300,000
Total capacity	27,300,000

It is said that a new elevator will be built in this city the coming season by the Chicago and Pacific Elevator Co., with a capacity of a million bushels. This will bring the total storage capacity up to nearly 30,000,000 bushels.—*American Elevator and Grain Trade.*

FAHRENHEIT AND CENTIGRADE THERMOMETERS.

The freezing and boiling points of water under a certain atmospheric pressure are the basis of the calculation in arranging the scale of all thermometers, but in Fahrenheit the freezing point, or zero, is stated as 32, and the boiling as 212, the intervening space being divided into 180 equal degrees, and in Centigrade the freezing point is marked "0," and the boiling point 100, the intervening space being divided into 100 equal parts, thus:



Therefore, to bring, say 60 F. to C. 60—32 = 28, then 180: 100 : : 28 = 15.5C

Therefore, to bring, say 15 C. to F. 100 : 180 : : 5 = 29 + 32 = 59F

Therefore, to bring, say 23 F. to C. 32—23 = 9 below zero 180: 100::9 = —5C

Therefore, to bring, say —5C. to F. 100 : 180::—5 = 9 below zero, or 23F

PAPER BARRELS.

A correspondent of the *American Business Guide*, writing from Hartford, Conn., has the following about making paper barrels:

"I noticed in the last issue of the *Guide* an account of paper barrels being manufactured in Hartford, and being on the spot and anxious to see all late and new inventions, took the trouble, or I will say pleasure, to find out all points regarding their manufacture. The company that have at last perfected the machinery for manufacturing the barrels, have worked on it for seven years, and in the face of great difficulties, at last see their efforts crowned with success, as they have the most perfect barrel ever seen. To prove the merit of the barrel they loaded a car with 100 and shipped them to Minneapolis by rail, then it was shipped back by the lakes, and then reshipped by cars back to Minneapolis. On the way back the train was wrecked and the car almost destroyed, yet when it reached Minneapolis, the wreck of a door broken off and the barrels rolled out, not a particle of flour was found on the car floor, notwithstanding the hard usage the car had sustained. The spectators could hardly believe that the hundred barrels contained flour, but upon opening them expressed their admiration at this neat way of shipping flour, as by these barrels none is lost, while by the old way from one to five barrels of flour are lost in each carload, added to which there is also a large cost on the trip for cooperage. This barrel does away with the loss of flour and cooperage and costs no more than wooden barrels. I understand there is now a company being formed in Minneapolis that will at once, at a cost of $300,000, build a manufactory that will turn out 10,000 paper barrels a day, and no doubt these will, in time, largely do away with wooden barrels. The company here also manufacture a paper barrel for shipping oil in, and a barrel full of oil has been shipped around to San Francisco without losing a drop. The paper barrel is a great success and a great invention, and, no doubt, the patentees will reap their well-earned reward."

ITEMS OF INTEREST.

CUTTING GLASS BY HEAT.—Many directions have been given for cutting glass by the action of heat: by setting on fire a string wet with turpentine, by friction with a cord, by a hot iron, and the like. Of these the hot iron is the simplest and the best. The following directions for the method, and also for making pencils or pastils to be used in a similar way, are from the *Young Scientist:*

The iron rod (a common poker answers very well) should be somewhat pointed, and the line along which the cut is to be made should be marked by chalk, or by pasting a thin strip of paper alongside of it; then make a file mark to commence the cut; apply the hot iron and a crack will start, and this crack will follow the iron wherever we choose to lead it. In this way jars are easily made out of old bottles, and broken vessels of different kinds may be cut up into new forms. Flat glass may also be cut into the most intricate and elegant forms.

Sometimes it is not convenient to use a red-hot iron, and some persons fail in its use. In such cases carbon pencils or pastils may be used. They may be made according to different recipes of which we give three:

1. Dissolve 100 parts of gum arabic in 240 parts of water and mix the solution with a paste prepared by triturating 40 parts of powdered tragacanth with 640 parts of hot water. Then having dissolved 20 parts storax and 20 parts of benzoin into 90 parts of alcohol (0.830) strain the latter solution, and add it to the mixed mucilage. Finally mix the whole intimately with 240 to 280 parts of powdered charcoal, so as to be uniform throughout. The charcoal should previously be passed through a fine sieve. The doughy mass is cut into suitable pieces, which are rolled between two boards dusted over with coal dust, until cylindrical strips about one centimeter in thickness are formed which are allowed to dry slowly between blotting paper. When using them one end is pointed like a lead-pencil, and, after having previously made a scratch in the glass with a file or diamond, the heated and glowing end of the pencil is carried along the line in which the glass is intended to be fractured.

2. Dissolve 8 to 10 parts of tragacanth in about 100 parts of hot water; add to the mixture under stirring, 30 parts of acetate of lead and 60 parts of finely-sifted beechwood charcoal, and proceed as in the previous formula.

3. Sticks of soft wood (willow or poplar), of about the thickness of a finger, which must be thoroughly dry, are immersed for about one week in a concentrated solution of acetate of lead, after which they are again dried. When ignited these sticks burn like glazier's charcoal.

The first formula is that of Berzelius, and yields the best product, as it burns much slower than the others. These pastils maintain a more uniform heat than a hot iron which is constantly getting cold.

STEEL CASTINGS are fast coming into use everywhere. The iron foundries of England are complaining loudly of the rage which exists there at the present time for steel castings, and the consequent falling off of their trade. Wherever strength and trustworthiness are needed steel castings are slowly but surely ousting iron ones. The number of steel foundries is rapidly increasing in England, and the consequent competition still weakens the prices. Many iron founders would fain make steel castings also, if they could. But there seems little general prospect of substitution at present, so trying have been the recent years.

SAFETY PLUGS.—An alloy of 5 parts bismuth, 1 of tin and 1 of lead, will melt at 250°, or 15 pounds pressure. If you diminish the bismuth to 4 parts, it will melt at the boiling of water; if you leave the lead out, and take equal parts of bismuth and tin, it will melt at 280°, or 30 pounds pressure; change this proportion and you may make an alloy melting at 290°, 300°, or 310°, equivalent to about 40, 50 or 60 pounds pressure. When you make an alloy of bismuth, using only tin and lead, you will find that only 3 parts tin and 2 of lead will melt at 320°, or 75 pounds pressure, and 3 of tin and 1 of lead 340°, or 100 pounds pressure.

AMALGAMATING IRON.—First clean the article with hydrochloric acid, and then plunge it into a solution of sulphate of copper, to which a little hydrochloric acid is added; it will then become coppered. Make a solution of bichloride of mercury, mixed also with a few drops of hydrochloric acid, and put the coppered iron in it, when it will become amalgamated.

A RELIABLE filler for porous hard wood is made as follows: Stir boiled oil and cornstarch into a very thick paste, add a little japan, and reduce with turpentine, but add no color for light ash. For dark ash and chestnut use a little raw sienna; for walnut, burnt umber and a slight amount of Venetian red; for bay wood, burnt sienna. In no case use more color than is required to overcome the white appearance of the starch, unless it is wished to stain the wood. The filler is worked with brush and rags in the usual manner. Let it dry 48 hours, or until it is in a condition to rub down with No. 0 sand-paper, without much gumming up, and if an extra fine finish is desired, fill again with the same materials, using less oil, but more of japan and turpentine.

MENDING A BELT.—When a leather belt has been slightly injured by rain or by being wet in any other manner, it should be dried as much as possible, and laps that may be started can be fastened by a little cement, the composition of which, as follows, is furnished by the Page Belting Company: Equal proportions of good glue and Prussian gelatine dissolved in water, and cooked in a tin vessel set into a large one containing water. Do not allow the vessel containing the cement to set quite on the bottom. It should be cooked until it is quite thick and ropy; it can then be worked into the places where the laps are started by means of a knife. The belt should then be hammered until dry, and a few pegs may be used, which can be obtained from any local shoemaker. Cut the pegs off a little from the surface on the reversed side, and hammer them down on a flatiron, anvil, or lapstone.

SUGGESTIONS ABOUT BELTING.—Many serious delays often occur in mills and factories where belting is used, by trusting the supervision of the belts to incompetent persons. It should be the rule of every careful manufacturer to employ none but experienced machinists to manage the belts and to be entirely responsible for them. A competent man will not have a belt of greater length than is necessary; for as is well known long belts sag heavily and cause so hard a drawing on the shaft as to increase the friction on the bearings. The motion, too, is unsteady which will rapidly wear out the machinery and belts. In the selection of pulleys it has been suggested that small ones should be used where consistent, since the belt adheres much better at quick speed than when large pulleys were used and the speed is lessened. It is not best to so place the pulleys that the belt hangs horizontally, but when it is necessary to do so, the belt must be kept tightened, or a constant slipping will prevent the pulleys from doing the work. Where endless belts are not used the motion should run with the lap. It is economical to place the grain side next to the pulley, as the belt is better protected and less liable to crack, besides furnishing a smoother surface to the pulley and being less liable to slip. An experienced machinist says that he always uses castor oil to make the belt hold. It excludes the air from between the belt and the pulley better than animal oils, and although it is more expensive, he has found that it preserves the belt longer than any other oil and keeps the leather more pliable.

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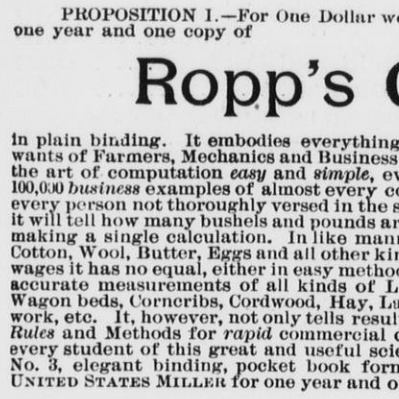

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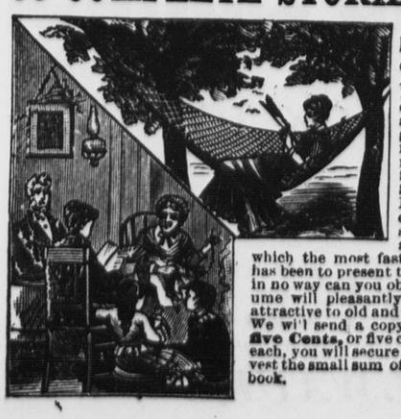

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MARTYRS TO DUTY.

The appended narrative forms one more chapter in the record of brave men who did their duty regardless of self, and doing it, died that others might live. The account is not fiction, but a record of facts from a correspondent of the *New York Times*.

Were I in want of a hero I could take one ready made from a story told me by our captain, himself as brave a man as ever walked a deck; the simple pathos of it is worthy of Marryatt. On the deadly Senegambian coast of Western Africa an English steamer is gliding into the mouth of one of those rivers in which the fever spirit makes his home. It is the height of the rainy season, and every man knows that a charge like Balaklava would be a light risk compared with that which he is about to run. Not a man is allowed to expose himself to the deadly dew, or to come on deck without having tasted food, and when the returning vessel leaves behind her the fever mists, and glides out of the river to meet the fresh breezes and bright waters of the sea, the captain breathes freely, thinking that the bitterness of death is past.

The next day one of the seamen suddenly turns sick, and after vainly trying to go on with his work is sent below to his hammock. on the following morning two more men sicken, then three, four, five, six. It has come at last, just when all seemed safe. Within four days every man of the crew lies helpless below, and the double burden of tending the disabled men and working the ship falls upon the captain and officers.

The only hope now is to run northward into the first port that offers. But who will maintain the fires and who will work the engines? Only one fireman—an American—is still fit for duty, and even he is already feeling ominous symptoms which he well knows how to interpret. But he is not one to care for his own life, when those of all his shipmates are at stake. Without a word he goes down into the engine room, and remains there five days and nights, with only one boy to help him, snatching food and sleep as best he may, and working as few men have worked, although he feels his life ebbing away hour by hour.

"On the fifth night I went down to look after him," said the captain, with a significant tremor in his manly voice, "and he came up staggering and half dazed, and said, 'Cap'n, I guess I'm 'most played out; I don't think I can do any more.'

"For God's sake," I said to him, "hold out just one more night. We're close to port now, and there's four dead already; if we don't get in to-morrow morning all the rest may go after them."

"'Well,' says he, 'for your sake, Cap'n, I'll try and fight through it somehow."

Next morning, when port was plain in sight, I went down and found him dead on the floor; and when I saw him lying there and remembered how he'd said it was for my sake he did it, I thought my heart would have broken. We never knew anything about him, except that he was an American, and the name of the place he hailed from. But whoever he may have been, he was the bravest man I ever knew."

THE PHILADELPHIA GRAIN TRADE.

There are some keen men in Philadelphia who recognize that Baltimore has gained an immense advantage in the grain trade by judicious business methods, terminal and storage facilities and legitimate railway competition. The chief complaint is against the Pennsylvania Railroad, which, unlike our Baltimore & Ohio, does not give any lasting benefit to Philadelphia merchants, unless compelled to do so. It is claimed by those who are arraigning the selfish policy of the Pennsylvania road that the grain merchants of Philadelphia built up a fine business with much labor and great cost. Its decline dates from the period when the Pennsylvania road entered the city of Baltimore and competed with the Baltimore & Ohio for the trade of this port. It reached its zenith in 1879, with a total of over 31,000,000 bushels; and has declined to a little over 7,000,000 for the past year. It is further claimed that this great falling off is wholly due to the control of the great monopolist road. Business men are urged to seek relief by encouraging competition with that line. The Baltimore and Ohio is capable of doing it, but city councils are keeping it out, and it is suggested that all who are interested should approach councilmen in such a way as to secure their furtherance of all legitimate competition in this direction.—*Baltimore Journal of Commerce.*

LITTLE WILLIE was fond of throwing stones at the passing school boys and then taking refuge behind the hall door. One day he did not get away so easily, and faring pretty badly, he burst into his aunt's presence with tears running down his cheeks, and sobbed out in great wrath: "I just wish I was an angel 'way up high, where the policemen couldn't catch me, with my pockets full of rocks; if I wouldn't give it to them boys!"

SOME BRITISH MILLING MACHINERY.

During the year 1884, a large roller flour mill, known as the "Albert Bridge Roller Flour Mills," was built in London, England, for Messrs. Marriage, Neave & Co., by the firm of Thompson & Williamson, milling engineers, of Wakefield, England. These mills were planned by Mr. W. H. Williamson, of the firm which supplied all of the machinery used. These mills were erected to compete in the London market with the flour from the mills in America and Austria, and no expense has been spared to make them capable of producing flour economically.

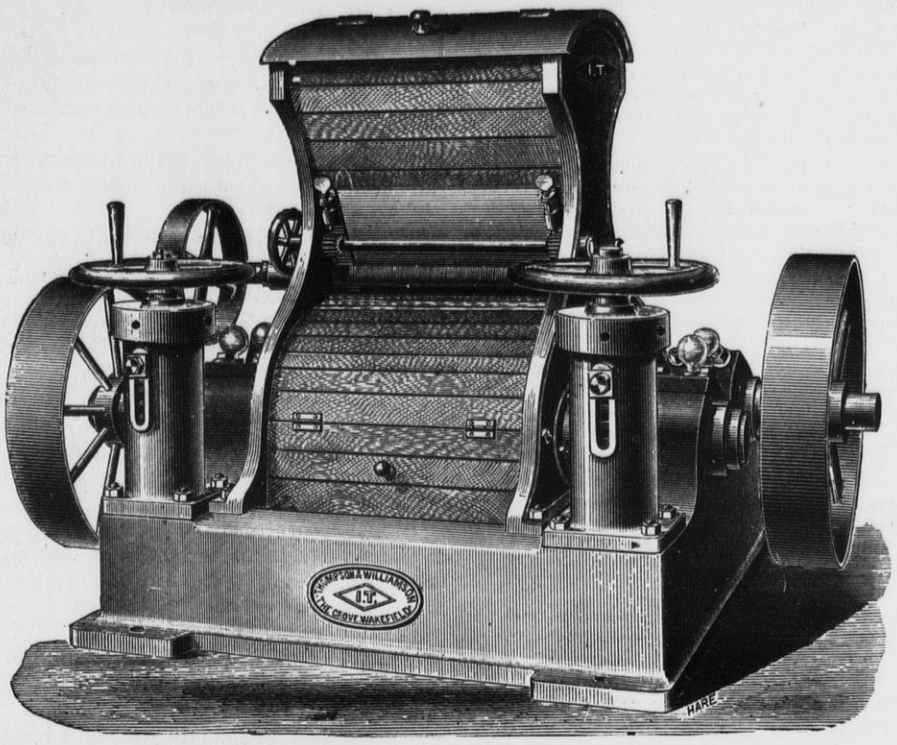


FIG. 1—THOMPSON & WILLIAMSON'S SMOOTH ROLLER MILL.

The mills have the best of receiving and shipping facilities either by rail or water.

The following description which we take from *The Miller*, London, we think will interest our readers:

"The building is divided into three independent portions by fire-proof walls; these are the granary, the wheat-cleaning house, and the mill. One of these sections shows the rows of machines standing next to the wall, and the other the rows next to the center of the rooms, the mill being designed to admit six rows in all, three on each side of the center line. The clearest way to describe the process of gradual reduction devised by Mr. Williamson, will be to follow the wheat through the building, explaining the various operations to which it is subject, from its entrance until it leaves in the form of flour. The grain is lifted from the barge by a hoist, and delivered on the first floor, from whence it is sent down the delivery shoot into the basement, to have the free dust and dirt with which it is mixed, removed by two Barnard & Lea separators, which together are capable of dealing with 150 quarters an hour. This process effects a rough separation, and renders the subsequent operations of mixing more healthy for the men, while it also keeps the stored grain in better condition. The wheat is next raised by two elevators to the top of the building, and is delivered into vertical distributing shoots which open into the various wheat garners on the floors below. There are fourteen of these distributing shoots, and each is divided by partitions into four compartments, corresponding to, and opening into, the four floors below. Each compartment is provided with a valve at the top, and thus the man in charge of the elevators can direct the stream of wheat into any one of the 56 garners below him, without descending from the upper story. The same shoots serve to draw off the wheat from the garners, and to deliver it to the ground floor, where it is mixed in the required proportions, and raised again by the elevators, to be shot into the mixed wheat bins adjoining the walls of the wheat-cleaning house.

"These bins communicate with the adjoining building by iron slides in the dividing wall, and their contents run into an elevator which carries them again to the top of the house, from whence they descend through each cleaning machine in succession, these being placed as shown in the engraving, one below the other on the various floors. The first is an Eureka zig-zag separator; this removes barley, oats, and other matters foreign to the wheat, which then pass over a pair of powerful magnets. These arrest all the nails, pieces of wire, and other fragments of iron and steel, which, if they remained, might damage the grinding machinery. Mather's decorticator is the next machine, and consists of three grindstones upon the same spindle, each working in a separate trough. The wheat is fed into the first trough, and works its way in succession through all three, being subjected on the way to a powerful scrubbing or grinding action which rubs off the beard and all the loose dirt. It then goes to the Eureka smutter, or if it be really clean wheat it may go to the smutter first, missing the decorticator. Here it suffers a second scrubbing, not so severe as the preceding, and then it is delivered to a powerful Victor brush machine, where it is passed in succession between four sets of fixed and revolving brushes arranged on a central spindle, and then the cleaning is complete, except that a small quantity of cockle seed remains to be extracted. If the wheat berry were a round plump body like an egg, the cleansing processes would not need to be so numerous or so searching as these are, but it must be remembered that it has a crease, which forms an excellent receptacle for dirt, along one side, and it has a beard at one end which likewise harbors dust. The first must be brushed out, and the latter scrubbed off, before the grain is fit to be ground, for since one of the tests of flour is whiteness, it follows that every particle of dust that is mixed with it takes off a certain proportion of its value.

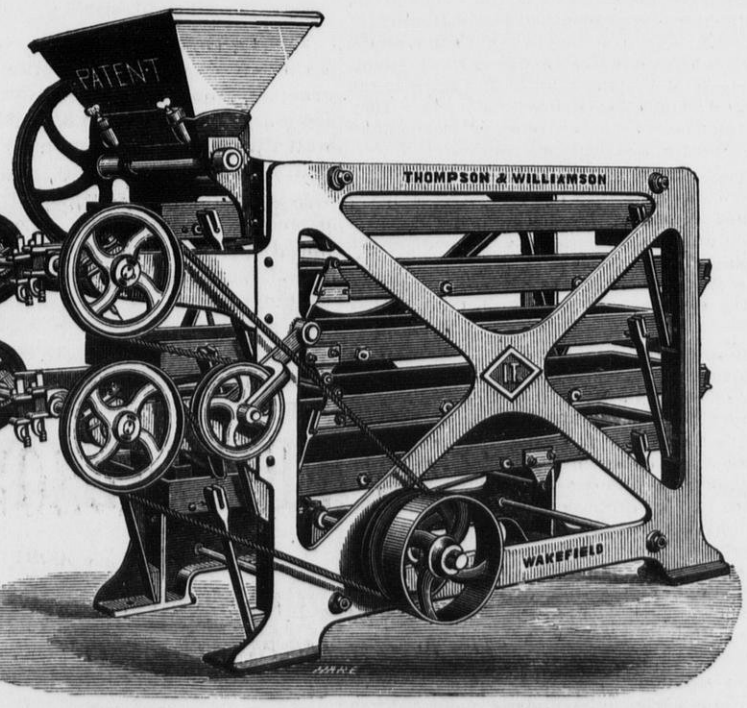


FIG. 2—THOMPSON & WILLIAMSON'S I. T. SIZING MACHINE.

"The cleaned wheat is then lifted by an elevator and delivered to one of the bins next the wall of the mill. These bins hold from 40 to 50 tons each, and are of the same capacity as those for the mixed wheat. The grain is drawn from each of these bins by iron sluices in the fireproof wall between the buildings, and is delivered to an elevator which feeds it over a set of magnets to an automatic grain weigher which registers every 50 lbs. entering it. By means of this instrument the miller can tell at what speed the grain is passing through his machinery. The wheat next goes to a grader on the first floor, where it is divided into three qualities by the size of the berries, and is then passed to the cockle cylinders, where the few remaining foreign seeds are removed. The grain is then ready for the grinding or rolling process, the two smaller sizes going to one mill, and the larger to another.

"The roller mills are arranged six in a row. The first two starting from the left hand of the row next the wall, take the two products from the wheat grade, and the remaining four form four successive breaks, there being thus five breaks in all. In addition to this there are a pair of smooth rolls if desired to flatten out the bran. It may be well to explain that the object of these breaks is not to make flour, but to divide the grain into bran and broken wheat kernels, known as semolina and dunst. A certain amount of flour is unavoidably made in the breaking process, but it is kept as small as possible. The semolina is broken into dunst, and the dunst ground into flour in the smooth mills of the second row.

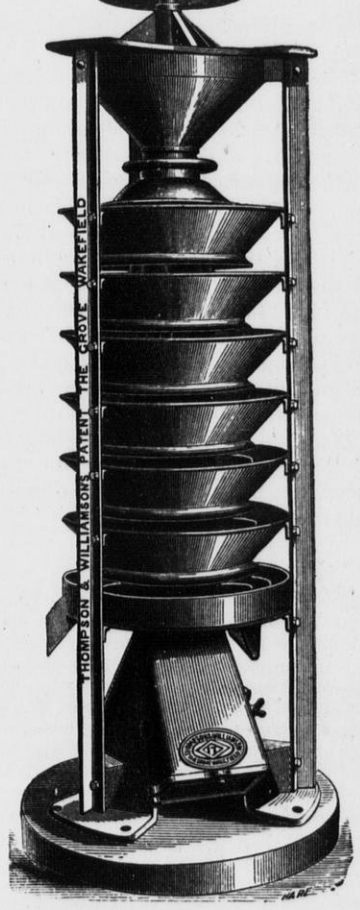


FIG. 3—THOMPSON & WILLIAMSON'S CENTRIFUGAL PURIFIER.

"The patent aspirating rolls for breaking operations are fitted with rolls of the hardest chilled iron, corrugated. Those of the first two breaks lead on with the back edge of the groove, and the subsequent breaks with the sharp edge. Mr. Williamson also prefers that the rolls of the earlier breaks should have straight corrugations, and those of the latter ones should be spirally grooved, and should have a greater differential speed than those which precede them. The first set split the grain along the crease, the next set break each half into two or three pieces, the next carry the division still further, and so on, until at last there is nothing left but the bran. Between the breaks the grain is subjected to two processes. The small quantity of flour which has been made is removed and the broken particles are assorted according to their sizes. Thus the first breakings are elevated to the No. 1 scalping reel, which is a rotating cylinder clothed with plated wire gauze. The flour goes through the meshes, and the semolina and wheat is delivered on to the sizing machine (fig. 2,) on the floor below. This has five reciprocating screens, sloping alternately in opposite directions. The crude product is delivered to the first, and the semolina falls through it, and is led into the head of the second screen, where the largest sizes of semolina are separated, and so on throughout the series of five sieves in each machine, the broken wheat falling over the tail of the top sieve, which descends to the second break rolls on the ground floor, being known as the first shredding. The broken wheat carries with it some loose bran, which is removed by aspiration as it falls through the hopper of the aspirator roller mill.

"This process is repeated at every break, and each time the loose flour is removed and the remainder of the product divided, according to size, into five qualities, the largest running down to the next mill. The final delivery of bran, which is cleaned in a bran duster on the upper floor, above the scalpers, is fed into sacks ready for sale. The material which passes through the sieves is semolina of varying degrees of fineness according to the size of the mesh, similar sizes from different machines being mixed together ready for the next process, which is carried out on I T centrifugal purifiers. These (fig. 3,) each consist of a hopper with an adjustable orifice through which the semolina flows in a thin sheet over a convex disc mounted on a vertical rotating shaft. The particles are carried round as they slide over the disc, and fall from it tangentially, the heavier being carried by the greater centrifugal force to a greater distance, and falling into the outer hopper, while the lighter drop into the inner one. As all the particles are of the same size, having been separated by sieves of the same mesh it follows that the centrifugal purifier divides them according to their specific gravities, the heavier being the better quality and being used for the best varieties of flour. The inner disc is in rotation, and again throws out the semolina, the selection being repeated five times in all. At the same time an inward current of air, as indicated in the figure by the arrows, carries all the particles of bran and cerealine into the central trunk, and away to the dust room. From the purifier the different semolinas are led to smooth rolls, with light pressure, to free any adherent bran.

"The resultant flour is dusted out, and the finer dunst thus produced, together with the finer varieties obtained in the breaking process, and gathered from the scalping reels, are then freed from flour, and passed on to other sizing machines to be re-sized, and each product being separately purified on centrifugal purifiers as already explained. The heaviest of these is reduced on smooth rolls, and is dressed in centrifugal dressing machines producing the 'patent flour.' The next heaviest is made into 'baker's flour,' while the third quality, with the soft tailings of previous dressings, is again dusted and sized on a separate sizer and special purifiers, and is rolled and dressed to produce flour of lower qualities. The flour is delivered into bins on the second floor, immediately over the Eureka flour packers, by which it is automatically weighed into sacks."

BOOK NOTICES.

HARPER'S MAGAZINE, which gave, some years ago, an interesting paper on Mr. Gladstone and his home at Hawarden, will give in the February issue, a similar article on the leader of the English Conservatives, the Marquis of Salisbury. Hatfield House, his residence, is one of the historic mansions of England; a part of it belongs to the older palace, which was the residence of the Princess Elizabeth before she became Queen of England, and in the grounds is the oak under which she was sitting when the messenger greeted her as sovereign. The paper will have a fine portrait of Salisbury, as well as many pictures of the house, and it is from the pen of Mr. Henry W. Lucy, of the London *Daily News*, and the "Toby, M. P." of *Punch*, who was the writer of the Gladstone article.

NEWS.

The Mazeppa Mill, at Red Wing, Minn., has again started up.

W. A. Newton & Co. Millers at Sauk Rapids, Minn., have failed.

BURNED—Jan. 16th, David Keefer's flour mill, at Covington, Ky.

Priest & Gordon's mill and elevator, at Mt. Pulaski, Ill., burned Jan. 16. Loss $14,000.

Burned, Jan. 4, Samuel Kaforth's mill at Milford, Pa Loss $20,000; insurance $7,000.

Petaluma, Cal., is to have a $50,000 flour mill in place of the one recently burned.

BURNED.—J. M. Lanne's mill at Ottumwa, Ia. Loss, $9,400. Insurance, $4,300.

Hicks Brown, the president of the Hicks-Brown Milling Co., at Mansfield, O., is dead.

Burned, Jan. 14, the elevator at Big Stone, Dak., with 6,000 bushels of grain. Loss $14,000.

Chester Darbick, proprietor of a flour mill at Courtland, N. Y., has failed with $117,000 liabilities.

A recent report places the total milling capacity of Dakota flour mills at 6,480 barrels per day.

Carter & Gooch, Corbin, Kan., are running their new flour mill with a 50 H. P. Westinghouse engine.

BURNED.—The Imperial Star Mills at Owensville, Ind., burned Jan. 21. Loss. $8,000. No insurance.

The Bradford Mill Co., of Cincinnati, O., are rebuilding the Huron Mill, a 400-barrel steam mill in Cincinnati.

The Okauchee roller mills, at Okauchee, Wis., owned by E. Schraudenbach & Co., were entirely destroyed by fire Jan. 15.

Wm. Brownlee & Son, Pierre, Dak., are putting a 35 H. P. Westinghouse automatic engine into their new flour mill.

O. F. Barber, at Golden, Col., is building a new flour mill which he will drive with a 75 H. P. Westinghouse automatic engine.

Capt. T. C. Butler, of Palatka, Fla., has purchased for his new saw and shingle mill a Westinghouse automatic engine of 60 H. P.

It is reported that the Lake Superior Roller Mill Co. will have their new 150 barrel mill at Superior, Wis., ready for operation May 15.

The Crookston Roller Mills, of Crookston, Minn., are nearly completed. Their power will be furnished by an 80 H. P. Westinghouse automatic engine.

Kenyon & Newton, Brooklyn, are overhauling their planing mill. They have pulled out their old engines and have substituted a Westinghouse automatic of 75 H. P.

The D. Keefer Milling Co., Covington, Ky., will have a full roller mill completed in time for this year's harvest, to replace their mill recently burned.

Burned, Jan. 12, Wagner's flour mill at Elroy, Wis. Four thousand bushels of wheat contained in the mill were burned. Loss on mill $5,000; Insurance $2,600. The grain was not insured.

Baer & Mohler, Covington, O., are making some changes in their mill and have placed an order with the Case Manufacturing Co., Columbus, O., for breaks, rolls, purifiers, etc.

Rathman. Fry & Co., Benton, Ohio, are making some changes in their mill and adding two pair rolls with patent automatic feed from the Case Manufacturing Co., Columbus, Ohio.

Lombard, Ayres & Co., are building a stave mill at Mobile Ala., which will be run by a 50 H. P. Westinghouse automatic engine. A smaller engine of the same make will be used to haul the logs into the mill.

Richmond Mfg. Co., Lockport, N. Y., have received the orders for grain cleaning machinery and bran-dusters for the Eldred mill at Jackson, Mich., and for the new mill at Niagara Falls being built by the Central Milling Co.

The Case Manufacturing, Co. Columbus, Ohio, have secured the contract of Lawe, Fuget & Lane, Tower Hill, for a full line of rolls, purifiers, scalpers, centrifugal reels, etc., for a complete gradual reduction mill on the "Case" system.

BURNED—Jan. 19th. The Ixonia Roller Mills, at Ixonia Center, (Pipersville), Jefferson Co. Wis., owned by Messrs. Piper, Gibbs & Co. Loss $25,000. Insurance $6,000. Cause of fire not known. The flames were first discovered coming from the roof of the mill.

The Case Manufacturing Co., Columbus, Ohio, have secured the contract of A. L. Strang & Co., Omaha, Neb., for a complete outfit of breaks, rolls, purifiers, scalping reels, bolting reels, etc., for a complete roller mill on the Case system, to be built at Scotia, Nebraska.

The Cummer Engine Co. have just been awarded the contract for one of their Balantine refrigerating machines for Heine's Brewing Co. of East St. Louis, Ill.; and for a 95 H. P. engine, with outfit complete to be used in the flouring mill of Lee & Herrick, Crookston Minn.

The Mill-owners' Insurance Association of Iowa at its annual meeting, has decided to locate the secretary's office at Des Moines. The treasurer reports the receipts for 1884 at $35,804; disbursements, $34,154. The amount of property at risk is $1,116,600.

WE have received from the publisher, John B. Alden, 393 Pearl St., New York—the first number of "Alden's Juvenile Gem," a weekly paper, neatly printed and illustrated, for 75 cents per year; also "The Novelist," published weekly, price $1.00 per year. The *Novelist* contains stories by the very best modern authors.

The Paine Lumber Co. of Oshkosh, Wis., have completed their new dry house, which is one of the largest in the country. The arrangement of the fans and power is particularly good. The exhausters, of which there are eight, are overhead, and driven from pulleys on a shaft, in the middle of which is a 20 H. P. Westinghouse engine coupled right and left to it, the engine and shaft making 400 revolutions.

Among the recent shipments of the Cummer Co., are two refrigerating machines to Joseph Henslee, of Newark, N. J.; a 350 H. P. engine to Carlton Foster & Co., Oshkosh, Wis.; a 95 H. P. engine to Edwin Groat, of Henderson, N. Y.; and a 130 H. P. engine to the Dominion Wadding Co., Montreal, Canada. They report a rapid increase in their sales of the Jonathan Mills flour dresser, and the Finch roll.

"The Hazard of Steam Pipes and upon Coverings for Steam pipes," is the title of a special report made to the Manufacturers' Mutual Insurance Co., and is published by Mr. P. A. Montgomery, the secretary of the company, at No. 113 Monroe st., Chicago, Ill. The report is very complete and is interesting and instructive to steam-users. The author is Prof. Charles B. Gibson.

The Milwaukee Dust Collector Mfg. Co. have received the order for a full line of dust collectors for purifiers, rollers and grain cleaners, to be placed in the Pillsbury "B" Mill at Minneapolis, which has just been contracted for with E. P. Allis & Co. Several of the leading mills at Minneapolis are putting in Prinz dust collectors, and they are also now being used at the Pillsbury "A", Washburn "A", and many of the large mills at that place, for collecting the dust from grain cleaners. The company is very busy, and the demand seems to be increasing all the time. They have an exhibit in New Orleans, representing fair samples of their present manufactures. The company is not in the habit of furnishing "trade items," as the list would be too large for regular publication.

The Case Manufacturing Co., Columbus O., have received the following orders the past month: From Corl & Black, Canton, Ohio, for one patent automatic feed for their "Allis" rolls; from N. Belford, Terrill Hill, O., for one Little Giant break machine and four pair rolls with patent automatic feed; from Pease & Ruble, Fairmount, Minn., for one pair rolls with patent automatic feed; from W. M. Potts, Barnestown, Pa., for two pair rolls with automatic feed, one 2 reel scalping chest; from the Heilman Machine Co., Evansville, Ind., for one "Little Giant" break machine; from Barney & Kilby, Sandusky, O., for one Case improved centrifugal reel, to be shipped to Mitchell & Fry, Oak Harbor, O.; from Albert Fike, Olivesburg, O., for rolls, purifiers, bolting reels, etc.; from Castree, Mallory & Co., Flint, Mich., for two pair rolls with patent automatic feed, to be shipped A. E. Atherton, Grand Blanc, Mich.; from Kerfoot Bros, Des Moines, Iowa, for one patent automatic feed for their "Allis" rolls; from Levi Bishop, North Webster, Ind., for breaks, rolls, scalpers, bolting reels, centrifugals, etc.

In a recent communication from the Case Manufacturing Co., Columbus, Ohio, they inform us that they are this winter putting up an additional wing 50 feet wide by 214 feet long, the especial object of which building is to facilitate their means of casting, grinding and cutting chilled iron. Adding, "that we have had a long experience in casting and handling chilled iron so that we are able to produce economically anything that anyone can in that line. In the new building, the foundry proper is 50x80 feet. The next section will contain the grinders with special preparations made in the foundation for them. In one end will be a new 100 horse-power automatic cut-off engine of the latest and most improved pattern, which has already been contracted for. Steam will be furnished by two 55 inch boilers; meanwhile the power will be kept in motion as at present." The writer says: "We are induced to make this investment because of the encouraging outlook for business and to enable us to utilize our knowledge which is the result of costly experience of casting and handling chilled iron, of which we mean to make a specialty."

NONSENSE.

"I played a good joke on my wife last night," said Tweezers, who is not kept out of jail on account of his brightness.

"What was it?"

"I had our coachman stand in the dark hall and kiss her, so she'd think it was me."

"What did she do?"

"Nothing. She only came into the parlor where I was sitting, and said: 'Why, Tweezers, I didn't know you had got home.'"

INQUISITIVE—Jinks tells a good story of a man on a Mississippi steamer who was questioned by a Yankee. The gentleman, to humor the fellow, replied to all the questions straight-forwardly until the inquisitor was fairly puzzled for an interrogatory. At last he inquired: "Look here, squire, where were you born?"

"I was born," said the victim, "in Boston, Tremont street, No. 44, left hand side, on the 1st day of August, 1820; at five o'clock in the afternoon; physician, Dr. Warren; nurse, Sally Benjamin."

Yankee was answered completely. For a moment he was struck. Soon, however, his face brightened, and he quickly said,—

"Yeas; wall, I calculate you don't recollect whether it was a frame or a brick house, do ye?"

PETER FIXED 'EM.—Yes, they were staying at a "winter resort," and it was rather disagreeable to have everybody so painfully aware of the fact that it was their wedding tour. So he made a desperate sort of an appeal to their confidential waiter. And Peter took it and smiled confidentially and discreetly, and said he understood and that he'd see to it, yes, sir. And the next day at dinner the people in the hotel behaved in the strangest manner—it was positively insulting, you know, and she had never been looked at in such a way in all her life before. And so, when they were leaving the hotel, he said to Peter privately: "Peter, did you attend to that little matter I spoke to you about yesterday?"

"Oh, yessir," said Peter, smiling confidentially; "oh, dear, yessir. I done it, sir; I see to it. I told 'em you wasn't no bridal couple, sir—had'nt never been married, sir. Oh, yessir, it's all right, sir?"

THE FARMER AND HIS DOG.—An anecdote: Years ago a Vermont farmer lost many sheep through the depredations of wolves. He journeyed to Boston and returned with a wolf dog, which cost him many dollars. He started out the next day and soon his dog was following up a scent rapidly and disappeared in the woods. The farmer on horseback followed and met a chopper. "Well, stranger, did yer see e'er a dog and a wolf go by?"

"Yaas."

"Wall, how was it?"

"The dorg was a leetle ahead."

FRESH.—A young gentleman who was pledged to take a young lady to a party remarked to her on the afternoon previous to the event that he was going home to take a sleep, in order to be fresh.

"That's right," she replied, "but do not sleep too long."

"Why?" he asked.

"Because," she answered, "I do not want you to be too fresh."

SLEEP ON.—A traveler retires to his room, leaving word that he is to be called for an early train. In the morning he is aroused from a sweet sleep by the porter's knocking vehemently at the door.

"Who's there?"

"Are you the gentleman that was to be called for the 5:25 train?"

"Yes. All right."

"Then you can go to sleep again, sir; the train's gone."

ANOTHER GAME ALTOGETHER.—"Well," remarked the justice, "what is this young man accused of?"

"I caught him playing poker, sir," replied the policeman.

"Yes," returned the court, "but I have no objections to poker, you know. If that is all the charge against him I shall discharge him. What have you to say for yourself, young man?"

"I was sitting down with some friends of mine, your honor, playing a friendly game of cards."

"Yes."

"We had a jack-pot on the table. It was opened, and I came in on a pair of deuces. The man who opened it stood pat and bet $10, and I called him."

"Called him on deuces? Twenty-five dollars fine. Call the next."

"Yes," gasped the prisoner; "but I thought you didn't object to poker."

"I don't; but to call a man on deuces isn't poker. Call the next case."—*Puck*.

MILLING PATENTS.

The following list of patents relating to the milling interests granted by the United States Patent Office during the past month, is specially reported by Franklin H. Hough, Solicitor of American and Foreign Patents, 925 F Street, N. W. Washington, D. C.

Issue of Dec. 23, 1884.—No. 309,744—Boltin-greel; C. N. Smith, Dayton, O. No. 309,716—Flour-bolt; A. Heine, Silver Creek, N. Y. No. 309,810—Grain separator; W. B. Vardell, Charleston, S. C. No. 309,670—Roller-mill; W. S. Bacon, Tiffin, Ohio.

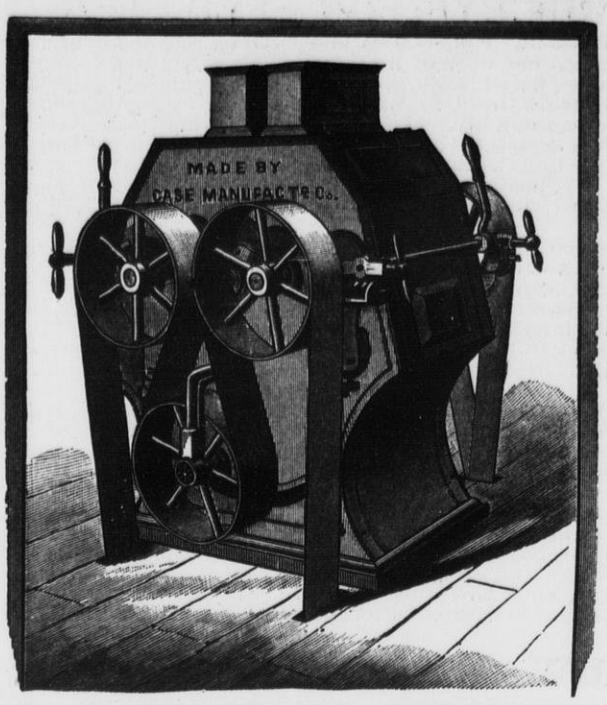
Issue of Dec. 30, 1884.—No. 310,134—Flour-bolt; A. Heine, Silver Creek, N. Y. No. 310,126—Flour-mixing machine; J. Dawson, Wilmington. Del. No. 310,180—Grain-drier; R. F. L. Plonnis, Budelsdorf, Germany. No. 309,957—Mill; B. H. Johnson, Lake Mills, Iowa. No 309,855—Oat-meal mill; J. C. Holloway and C. A. Hudson, Salinas, Cal. No. 310,127—Roller-mill: J. Dawson, Willmington. Del,

Issue of January 6, 1885.—No. 320,483—Bolting-reel; J. Warrington, Indianapolis, Ind. No. 310,496—Flour-packer; L. Creveling. Akron, O. No. 310,476—Grain-scourer; A. L. Teetor, Indianapolis, Ind. No. 310,503—Grain-separators. measuring and sacking attachment for; J. Forrest, Grand Forks, Dakota. No. 310,236—Grinding-mill; W. H. Wakefield, Baltimore, Md. No. 310,181—Middlings-purifier; I. M. Case, Columbus, O. No. 310,374—Roller-mill; S. R. Campbell, Buffalo, N. Y. No. 310,430—Roller-mill; N. W. Holt, Buffalo, N. Y.

Issue of January 13, 1885.—No. 310,772—Flour-bolt; J. F. Ayres, Alloway, N. J. No. 310,752—Flour-bolt; J. C. Frazier, Vassar, Mich. No. 310,709—Grain-reducing; A. C. Nagel, R H. Kaemp and A. W. G. Linnenbrugge, Hamburg, Germany. No. 310,734—Grain separator and cleaner; E. Sherman, New Pendington, Ind,

Issue of January 20, 1885.—Grain-elevator; R. W. Milbank, New York, N. Y. No. 310,916—Grinding-mill; S. C. Scofield, Frehport, Ill.

READ THIS!



9X18 FOUR ROLL MILL—"BISMARCK."

ASHTABULA, OHIO, JANUARY 12th, '85.

CASE MANUFACTURING CO., Columbus, Ohio.

GENTLEMEN:—It is now over one year since we accepted our mill from you and we have had ample time to make careful tests and comparisons of the products of other mills, and we feel that we owe to you at least an acknowledgment of our opinion as to the merits of your system of milling. We are free to confess that we do not believe that there are any parties building mills to-day that do or can build better mills than you do. Our convictions are made up from the stubborn facts that we can and do get 30c. per bbl. more for our flour in many places than many of the leading mills do for theirs.

One leading house in New York writes us as follows: "Your samples in and carefully tested and we are frank to confess that we do not see how the flour can be improved." We can give you many instances of approval of our flour but we think above is enough inasmuch as it is unsolicited by you.

Yours Very Truly,

FISK & SILLIMAN.

We can do as well for others as we have for F. & S. Correspondence solicited.

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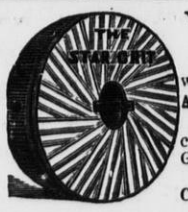

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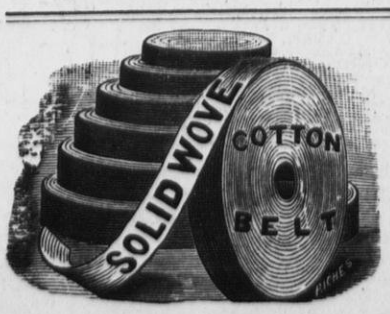

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The United States MILLER

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ACCIDENTS IN MILLS AND THEIR PREVENTION.

Our German contemporary, "Die Muehle", has an article upon this subject, from which we translate the following: "Prevention is better than cure," is an old proverb, that will bear constant repetition in manufacturing establishments. A compilation of the causes which produce the largest number of accidents in flouring mills, may find a place here, together with the various methods employed to give the necessary protection to the employes. Of course any such attempt will be incomplete; if the task on hand related to safety appliances only and their construction, it would be comparatively easy; the difficulty lies in the fact that the protective measures must not in any way interfere with the successful operation of the plant; and whoever attempts to pass a judgment on the feasibility of certain protective measures, must have a thorough and practical knowledge of milling. The design of a plant will give sufficient indication to a man who possesses practical experience, to enable him to form an opinion about the dangers of its separate parts, as well as about the practical application of certain protective arrangements. A theoretical knowledge alone is insufficient in this connection. The construction of mills, however, and the design of their plant, is so various, that it would absorb the full time and attention of a man to gain merely a superficial idea about the principal mill plans. In addition to this, we must not forget that the whole milling is in, what we may call, a state of fermentation; the changes due to the introduction of rollers, dismembrators, purifiers, etc., are not yet universally explained and accepted. In many places these changes are yet in their experimental stage, and represent an uncertain groping in the dark. It will need a more extensive experience to settle the superiority of one or the other method, and after that is obtained the question of dangers of accident incidental to the system can be determined on an intelligent basis. Meantime the present treatise will serve as a stimulus to others to follow up this all-important subject, so that the protective measures, guarding against accident, may keep abreast of the technical development of the milling industry.

Reviewing the accidents in the past, we classify them according to the separate machines or parts of machines which caused them. First of all we have to consider some general cause, and among these are the employees clothing, which should always be smooth and close-fitting to the body. Everything loose, flying or hanging, should be avoided. The floors of the mill should be kept as clean as possible, for flour dust tends to make them slippery and dangerous on that account. Special care must be taken that oil cups have waste cups or basins attached to the journal, so that no oil drops can reach the floors.

Speaking about the separate machinery, we primarily divide them into motors, transmissions, working machines and accessory machines.

A—MOTORS.

As almost all mills at present receive their motive power from steam, water or wind, a consideration of these motors will cover the ground sufficiently. Generally all these motors have some sort of apparatus connected with them by means of which they can be stopped at will. In larger establishments we find in addition, special signal apparatus by which notice can be sent to the engineer in case of danger. The request of "stop at a moment's notice" can perhaps never be realized, because the factors in motion represent too much weight to be stopped suddenly; it is therefore necessary that means are provided for a sudden stoppage of separate parts of the plant. Care must be taken that any motor or machine which has been stopped, cannot start again by itself in any way, as the most dangerous work is performed during these periods, such as oiling, cleansing and repairing of belts and gearing, and a sudden unexpected starting of the machinery may cause serious accidents.

A place separated from the establishment proper is generally made to contain the wind or water wheels, also the steam engines. The latter especially are benefitted by a separate room, as the flour dust seriously interferes with the cleaning of the machinery, which on this account, needs a larger amount of lubricating oil, more power and is endangered by useless friction. The piston rod and fly wheel should, if possible, be fenced in so that nobody can touch them in any way. Numerous accidents have occurred by the bursting of a fly wheel, and it will be a good policy, if they run at a high velocity, to have a wrought iron band around their flange and to have them boxed in with strong and heavy wood-work to break the force of the flying pieces in case of bursting. Only the engineer and his assistants should have admittance to the engine room, and no stranger should be allowed to remain in it under any circumstances. A sign to that effect should be posted up in a conspicuous place.

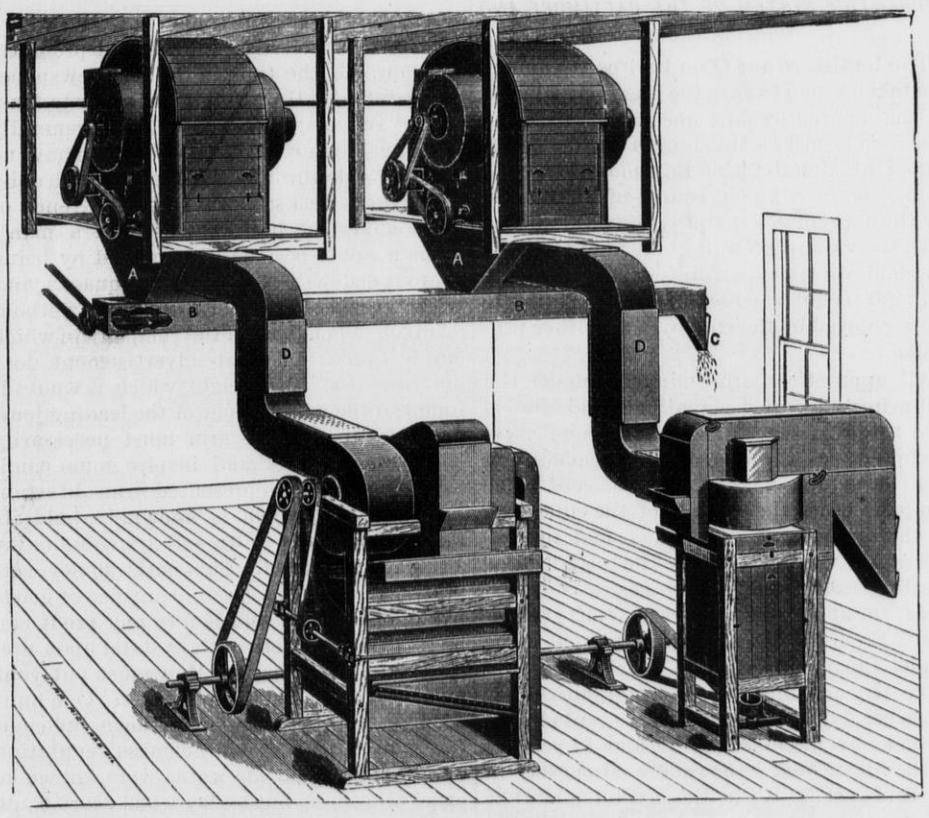
The gates for the water wheels seldom close tightly; little twigs, ice, etc., often tend to enlarge the small openings. In this manner it is possible that the plant can be started at an entirely unexpected time, perhaps just when men are employed at cleaning or repairing, thus causing serious accidents. Besides this the leakage of the gate may cause, during very cold nights, a freezing of the small quantities of water that leak through, in parts of the wheel, thus causing trouble when the machinery is to be started next morning. On this account something should be done in some manner or other which will prevent the access of any water whatever to the wheel when the gate is closed.

The moisture around the waterwheels, and the formation of ice during winter time, will make the approaches slippery and care must be taken to have the necessary guards in their proper places and in good condition to prevent accidents, such as falling into the water or into the wheel, etc.

It has repeatedly happened with wind mills that people have been struck by the wings; this is an accident for which no safeguard can be invented for older mills. New mills will do well to have the wings up high enough so that the lowest end does not come nearer than six and a half or seven feet to the surface of the ground. Automatic regulators in windmills are necessary for the safety of the employes, as without it the unsteady motion has often been the cause of breaks in the plant, causing injuries of a more or less severe nature to the attendants.—*The Milling World.*

DUST COLLECTORS.

Millers have long since been convinced that the dangerous, dirty, cumbersome dust-room should be abolished, and the very fact has led numbers of them to adopt too readily anything offered as a substitute, without first looking into the actual merits of the machines. In many old mills the millers were cramped for room, and this was also an inducement to try a substitute that would occupy so much less space than a dust-room, and although the collection of dust may have been considered a simple matter by the uninitiated, there are very few things that so long baffled inventive skill as an efficient dust collector. The Milwaukee Dust Collector Manufacturing Company, however, came to the rescue with the "Prinz" Dust Collector, which has long since proved itself worthy of everything said in its favor. Our readers are probably familiar with the general construction of this machine from former illustrated descriptions in this journal, and they certainly should be anxious to experience the great advantages to be obtained by its practical use, as the *saving of flour alone* by their use amounts to from six to seven pounds per barrel, which is an object worthy of consideration. The manufacturers are shipping machines in large numbers to all civilized countries, which is fair evidence that our foreign milling friends appreciate the fact that the "Prinz Patent Improved Dust Collector" is indispensable.



ILLUSTRATING MILWAUKEE DUST COLLECTOR.

We give on this page an illustration, showing the Prinz Patent Dust Collectors with fan attachments, collecting the dust from a separator and smutter, each cleaning machine having a separate dust collector. The use of the dust collector in connection with grain cleaning machinery is becoming quite general, and is commended for its effectiveness and economy in this particular.

The grain cleaners' fans blow through spouts "D D" to air trunks "A A," upon which dust collectors rest, and from which they suck the air through.

It is very necessary that dust collector fans should be run at such a speed that they will easily dispose of all the air coming to them from cleaners, and produce a tendency to a vacuum in the dust collector and air trunk, thereby preventing any back pressure on cleaner fans; and there should be an inward draught noticed on opening side doors of dust collector, as well as at entrance to "back-draught" tube, which will indicate that dust collector fans are speeded right.

A conveyor "B B" can be placed, as shown in cut, underneath air trunks "A A," carrying off the dust which may accumulate.

The material coming up from dust collector conveyors is run with this, and the whole is discharged through the automatic discharge valve "C" in this cut at end of conveyor.

This discharge valve should be made similar to those on separators or smutters, which simply consists of a piece of board hinged at the top by leather or other flexible material. This is necessary, as otherwise the collector fans would receive air through the opening at that point, whereas it should receive its supply of air from the cleaner.

The spouts discharging the dust from collector conveyors to conveyor "B B" are not shown as they are upon the right hand side of the machine facing the cuts.

When conveyor is not used underneath hoppered air trunks, slides should be placed in bottom of trunks as shown in previous illustration, for occasionally removing any dust that may accumulate at this point.

Other applications of the Dust Collector are most successfully made, including its use in connection with purifiers, roller mills, millstones, and, in fact, all dust producing machinery; and the manufacturers have had opportunities of testing the utility of the dust collector under greatly varying conditions. The great number (35,000) of machines sold is a good guarantee that the "Prinz" machine has stood the various tests successfully, and our interested readers may obtain much valuable information by applying to the Milwaukee Dust Collector Manufacturing Company for a copy of their beautiful illustrated "Treatise on Dust Collectors."

SOFTENING LEATHER.

Neatsfoot oil will not soften leather under all circumstances; neither is castor oil any better. Oil is not necessary to the pliability of leather—the leather of the ox, goat, calf, and kid. It is necessary that the leather be kept moist, but oil need not be the moistening means. Yet in use oil is the most convenient means for keeping leather soft. It would be inconvenient to employ water to keep pliable the leather of our boots, because of its spreading the pores of the leather and admitting cold air; besides, unless always wet, leather becomes hard and rigid. Oil, on the contrary, keeps the leather in a proper state for its best usefulness, that of pliability. But in order that oil may soften the leather, its way should be prepared by a thorough wetting of the leather by water. Much less oil is required if the leather is well saturated with water. The philosophy is obvious; water is repellant to the oil, and prevents it from passing entirely through the leather, holding the oil in the substance of the leather. The use of water for softening belts in factories is not inconvenient, if advantage is taken of a holiday. At night the belts may be brushed clean and thoroughly wetted, then in the morning use the oil; a much smaller quantity is necessary to render the belt pliable than when no water is used.

The amount of power wasted by shafting out of line, badly lubricated, of unsufficient size and imperfectly coupled, can hardly be estimated. Great as is this loss, that from badly laced, crooked, stiff and generally outrageous belting is but little less. In some establishments a belt lacing of sufficient size for the main belt of the establishment is considered plenty good enough to lace a three-inch belt with, and is used accordingly. A punch large enough to make holes for the biggest lacings is, of course, necessary, and it has the advantage of answering for all sizes of belts. The apparent advantage of having but one size in a large establishment is captivating to the business department. The result in belt efficiency, however, is something which would astonish the counting house, if it could be made to understand the figures.—*Industrial America.*

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ANNOUNCEMENT:

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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.

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MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees

ACADEMY OF MUSIC.—Performances every evening. Wednesday, Saturday and Sunday matinees.

SLENSBY'S VARIETY THEATER—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

THE value of wheat flour imported into Canada the last six months of 1884 was $1,650,268; corn meal, $185,061. The total value of wheat exported from Canada for six months mentioned above was $3,460,167, of which only 782,969 was product in Canada.

According to some of our medical journals, the use of mullein as a palliative for the cough or phthisis seems to be meeting with favor in various quarters. The customary form of administration has been a milk decoction of the plant. More recently the smoking of the leaves has been recommended as a more agreeable and effective method of administration.

PERSONAL.

Mr. G. M. Marshall, of the firm of G. M. Marshall & Son, made us a pleasant call Feb. 25.

On the evening of Feb. 9, Miss Lily M. Porter, daughter of M. L. C. Porter of the Porter Milling Co., Winona, Minn., was married to Mr. W. M. Chandler, second son of Hon. Wm. E. Chandler, Secretary of the U. S. Navy.

John K. McIver, for a long time secretary of the Detroit Board of Trade, died suddenly of paralysis of the heart, Feb. 18.

M. H. Buck, formerly engaged in milling at Delafield, Wis., has moved to Wausau, Wis., and is not now in the business.

W. D. Gray is still at the New Orleans Exposition.

Col. Otway Watson, president of the Case Manufacturing Co., of Columbus, O., died February 19th, at his home in Columbus, after an illness of four months. He leaves a family consisting of a wife and two young daughters.

The illustration on page 69 gives a good view of the present appearance of the largest mill in the state of New York. It is in New York City, and is the property of Messrs. G. V. Hecker & Co. The mill has a daily capacity of from 2,000 to 2,500 barrels of wheat flour, and also makes a large quantity of oatmeal of various grades, cracked wheat, etc. The goods made by this firm are to be seen in nearly all first-class groceries in this country. The mill was burned down a few years ago, but was recently rebuilt with all the latest improvements.

APPRENTICE SYSTEM OF THE BALTIMORE AND OHIO RAILROAD.

The Baltimore and Ohio Railroad Company has taken a step toward the practical solution of the apprenticeship question. An order has been issued establishing a technological school at Mount Clare, Baltimore, "for the promotion of a higher course of instruction for the apprentices than that now pursued," with the view of affording the young men in its employment opportunities for obtaining a liberal technical education far superior to those enjoyed by the employees of other railroads.

All apprentices are embraced under the following general designations, and graded into three classes: The first or junior class of apprentices, the second class or cadets, and third or senior class of cadet officers. The company bears the expense of the education of the apprentices and cadets, and in consideration thereof expects the privilege of availing itself of their services, at fair salaries, for at least three years after graduation. From the day of their admission to the school the apprentices and cadets are to receive pay as follows: The apprentices, 70 cents per day in the first year, 80 cents in the second, 90 cents in the third, and $1 per day in the fourth year; the cadets, $1 per day in the first year, $1.12½ in the second, and $1.25 per day in the third year, and cadet officers, $1.50 per day in the first year, $1.75 in the second, and $2 per day in the third year.

In their appointment to the school, preference is to be given, other things being equal, to the sons of employees, who have been killed or injured in the company's service, and free tuition is given to those only who are sons of employees having been in the service of the company for five consecutive years. They must pass a Board of Examiners as to proficiency in elementary studies and soundness of health, and are subject during study to rigid discipline and frequent examinations. The exact scope of the school and the service for which its pupils are to be trained are not clearly defined; but it is evident from the long courses that the places to which they may aspire after their training are high indeed.

THE GREAT DALRYMPLE FARM.

S. A. Dalrymple, of the celebrated Dalrymple farm at Casselton, Dak., and nephew of the propietor, recently said:

"We had this year 32,000 acres in wheat and 2000 acres (enough to feed the stock) in oats. Nine successive crops have been raised off this land, and this year our wheat averaged 14,15 or 16 bus. to the acre. Next year we will begin to summer fallow, letting about 3,000 acres lie idle each season till it has all had a rest. We expect that after the summer fallowing the yield will be from 20 to 25 bus. per acre.

"The 34,000 acres are divided into three farms of nearly equal size. For each of these there is a headquarters, with a superintendent, bookkeeper, foreman, agent and other officers. These farms are again divided into sections of 2000 acres each, under a division foreman, who carries out the orders from headquarters transmitted to him by telephone. Each division has its boarding house, with men cooks. In the spring seeding about 500 men are employed, and during the harvest about 1,000. In the fall all the hands are discharged except sufficient to attend the 400 or 500 horses and mules through the winter. At each headquarters there is a store upon which the cooks make requisition for all provisions. The whole thing is so systematized that we can tell to a cent the cost of a meal's victuals for a man, and the cost of seeding, reaping or plowing an acre of ground.

"We ship all our wheat to Duluth, and thence to Buffalo, where we find the best market. To-day wheat sells in Buffalo for 4c more, after the shipping expenses are allowed for, than at Duluth.

"A thing which is needed as much as legislation," said Mr. Dalrymple, "is competition on the lakes. Duluth enjoys a monopoly, and, as a consequence, the grading of wheat is entirely arbitrary and unjust. The yhave established the new grade No. 1 northern, and have, practically, done away with the old No. 1 hard, which originated in the northwest. They have nine different grades, and I am satisfied that no living man can distinguish nine varieties of wheat in that which comes into the Duluth market.

"As an illustration," resumed Mr. Dalrymple, "I had a separate piece of 100 acres which I had entirely cut in one day. It was also all stacked on the same day, and hauled to market on the same day. I shipped it to Duluth, and received three separate gradings for it. Now, it is impossible that any real difference could exist. No one part of it could have been in any way damaged or inferior to any other part. It is such things as this convince me that the grading is done by no system, and is quite arbitrary. I doubt if one-half the wheat is even so much as looked at by the inspectors."

Ask the successful trader how and where it is best to advertise, and he will promptly tell you: all the time in the best newspaper you can find. He will tell you never to trust to the tiresome circular which is generally tossed aside unread, as business men have no time to wade through the dozens which daily flood their desks; nor yet to the fence or stone along the highway, because a man's name is apt to become demoralized by being confounded with those of the quacks and tricksters who invariably prefer this method. So much depends upon the company in which one is found. A cheap advertisement does not carry half the weight which it would if found in the pages of one of the leading journals of the day. A firm must necessarily gain some respect and inspire some confidence from being represented in an old established journal which is known to hold its reputation too high to soil its columns by advocating a fraud. This costs money, certainly, so does the cargo or invoice of goods which have to be sold before any profit can be realized, but both outlays stand upon precisely the same basis. You must put your money out and await the returns. One hundred years ago it might have been sufficient for a man to rest his business reputation upon the fact that his wares were known to excel all others, but to-day when every trade and profession is teeming with a rushing competition mere superiority alone stands no chance whatever. You must keep yourself constantly before the public by patient and persistent advertising or you will sink into oblivion, and your wide awake neighbors, whose goods are not half as valuable as yours, will be counting his gains while you are footing up your losses.—*Journal of Commerce.*

SAMPLING WHEAT.

"I beg your pardon, sir: but I have often seen you fellows with these sticks and little bags and always wondered what they could be used for."

The above remark was made Saturday by an elderly gentleman to a young man on Third street and Third avenue South.

"Why, you see—but if you're going up town, let's walk along—fearful cold weather this?"

"Yes, but about the stick?"

"O! the prod. We sample cars of wheat with these. You see this cup on the bottom? Well, this is plunged down into the wheat, then the string is loosened off from the top here, the stick pulled out and then the cup hauled up by the string full of wheat from the bottom of the car. See!"

"What do you do with it when you get it?"

"One of these little bags is filled with wheat from all parts of the car, taken up to the chamber of commerce and the car sold on the merits of the sample.

"Ah! I see!"

"Then sometimes we have wheat shipped in and then we have to try it to see that it is not 'set up.'"

"'Set up;'" what's that?"

"Well, sometimes the smart ones in the country will put soft wheat in and cover it up with hard and try to palm the whole off as hard wheat."

"Are there many ways of setting up a car?"

"Just as many as there are buyers. I found three cars set up this week, one had about ten inches of soft wheat in the bottom and then was filled the rest of the way with hard. Another one had a layer of about fourteen inches sandwiched in between layers of hard. The third one and probably the most difficult to detect was loaded to swindle—fifteen or twenty bags were placed separately in the car, all standing on the opened end. Then the car was filled with hard wheat to the level of the bags, when the bags were carefully raised, the wheat was carefully left in the same position as if the bags were still around—then hard wheat was spread over the top, leaving a car of No. 1 nicely plugged with thirty to forty bushels of soft wheat."

"Does it pay shippers to set up cars?"

"No; honesty is the best policy in loading cars. They may get one or two cars through, but when the inspectors get on to it the shippers will lose grades all the rest of the season."

"Lose grades! What's that?"

"O! the inspectors give the buyers the benefit."

"What do you dealers think of a man who doctors his cars?"

"They think him a fit subject for Stillwater or St. Peter. Say, do you know where they generate cold? No, Well, you go up some raw morning and stand on the railroad track, back of Elevator A 1 and 2, and if you don't come to the conclusion that you have struck the manufacturing center, then I give it up."

"Pretty cold job then, getting samples?"

"You bet; a fellow might look around a long while before he found a colder place to put his feet than in a car of wheat."

Then they parted and the reporter heard no more.—*Minneapolis Tribune.*

LIENS FOR MACHINERY FURNISHED.

It frequently becomes an important question to mill furnishers and manufacturers, and furnishers of machinery of various kinds, how they are to be secured when machinery is put into mills and buildings on credit, or not to be paid for until used. In many cases the machinery partakes of the nature of fixtures. It then becomes a part of the realty and ceases to be chattels. If the real estate is mortgaged, the machinery may be covered by the mortgage, and the furnisher loses all right to take possession of the machinery he has put in, and by the foreclosure of the mortgage and financial failure of the owner of the property, he is without remedy. We have known of cases in which vendors have taken chattel mortgages on machinery and appliances put into mills and buildings, to secure part payment of the purchase price. Frequently, also, the sale of machinery is a conditional contract. It is agreed between the vendor and the vendee that the title shall not pass until it is paid for, and the law will uphold a sale of chattels made on such condition, although in some States, as in New York, the agreement must be in writing, and filed as a chattel mortgage. In the absence of a statute making a writing obligatory, a conditional sale is valid, whether made orally or expressed in writing. As just intimated, however, the difficulty which the furnisher may get into if he relies on a chattel mortgage or conditional sale to protect himself, is the fact that when the machinery is put into place, it may, and usually does, become a fixture and a part of the realty, and the furnisher's security is good for nothing, and the conditional sale loses its force.

As to whether a piece of machinery will become a fixture when put into a building or manufactory of any kind, depends largely upon the circumstances of a particular case. As a general rule, it will become a fixture, if so attached or affixed to the mill or building as to become a permanent and an habitual part of it, or if it becomes a component part of the structure for the purposes for which it is designed, or if without it the mill or manufactory would be incomplete or imperfect, it is a fixture. Something depends, also, upon the intent of the purchaser in putting it in. If it is put in with the intent of making it a permanent accession to the building, and of using and adopting it as a part of the machinery and process of manufacturing, such intent will do much toward making it a fixture in the eye of the law, without reference to the manner in which it is attached or affixed to the building, and without reference to the fact whether it can be removed without damage or injury to the structure. In brief, if the article or appliance is essential to the use of the mill or to carrying on the process of manufacture for which the building is designed, and has been put in to be used exclusively in connection with it,

and is a necessary part of the machinery, or a necessary appliance for carrying on the particular manufacture, and without it the efficiency of the mill would be appreciably impaired, then it is a fixture, and a part and parcel of the building, and of the land upon which it stands. For amplification of the law of fixtures, with illustrations taken from cases which have actually occurred, the reader is referred to an article on the subject by the writer in a previous issue of *The Lumber World.*

On applying the above rules, therefore, if there is any doubt that the machinery or appliance may become a fixture, and the furnisher proposes to have a lien to secure himself for the purchase price, or a part of it, by agreement with the purchaser, the only safe and secure lien is a real estate mortgage, covering the structure in which the machinery is placed. But there are very frequently cases in which the furnisher has a lien for the whole value of the machinery furnished, without any agreement with the purchaser for such lien, and the remainder of this article will be devoted to this class of liens. We refer to what is commonly known as the mechanic's lien. A better designation would be "statutory lien," as it arises and is created by express statute, and is thus distinguished from all other liens. Every State in the Union has a statute creating a lien of this nature. The original design of these statutes has ordinarily been to protect workmen, mechanics and material men, who have performed work, labor or services, or furnished material toward the erection, alteration or repair of any building or structure. Every statute contains words which extend its scope as far as this at least, although they differ somewhat in their wording. The wording of some statutes is such that its scope is extended expressly or by implication to furnishers of machinery and fixtures, while the scope of other statutes is left in doubt, and must be interpreted by the courts. In some States, as in New York, Pennsylvania, Michigan and Ohio, the wording of the statute is such that a lien is expressly created in favor of one who furnishes machinery or fixtures for a mill or manufactory of any kind. In most of the States, however, it is left in doubt, but it may be stated as a general rule of law, that machinery incorporated into a building, in such a manner as to become fixtures, will subject the entire building and the land on which it stands, to a lien for the value of the fixtures.

It may also be stated as a general rule of law that the lien attaches from the time the machinery is put in position or affixed to the building, and it takes precedence of all other liens or incumbrances placed upon the property after that time. In other words, the owner of the structure cannot, by agreement with some one else, or by suffering judgment, create a lien on the property which will be prior to that arising in favor of him who furnishes fixtures. As a matter of course, the statutes being designed to create liens on real property, no lien will arise in favor of him who furnishes machinery which is so placed in a building, and used and applied, that it does not become a fixture, but remains personal property.

As we have intimated above, most of the statutes of the various states create a lien for "materials furnished and services rendered in the construction, erection or repair of any building." Connecticut has a statute worded in that way, and its courts held that it created no lien for machinery furnished for fitting up a woolen mill, although the machinery was so affixed and attached to the building as to become fixtures, and a part and parcel of the structure, for the reason that the furnishing of the machinery does not constitute an erection, alteration or repair. In this case the building was already erected at the time the contract for furnishing the machinery was made. Had the machinery been furnished and put in at the time of the erection of the building, then the furnisher would have had a lien and the court so held, because it would constitute an "erection" coming within the meaning of the act.

It may be stated as a further general rule of law, therefore, that a person contracting to erect a building and equip it with machinery and fixtures for manufacturing purposes, will have a lien, not only for the materials that are used in the construction of the building, but also for the machinery and fixtures. Unfortunately, however, in actual practice, this course is so seldom carried out by furnishers of machinery that they would receive very little benefit from the mechanic's lien laws, if they were brought within the scope of the laws in no other case. If the statute contains words giving a lien for "improvements" to a building or structure, it has been held that the putting in of machinery in the nature of fixture is an improvement and gives rise to a lien.

Readers may be inclined to think there is a good deal of quibbling about the mechanic's lien laws as construed by the courts. It arises in this way: The statutes are in derogation of the common law. They create a lien which would not exist if the statute were not enacted, and impose a lien upon a man's real property without his express consent for a lien, and therefore they must be strictly construed; that is, the courts must not allow a lien to be created by them in cases where it was not the intention of the legislature to create a lien. The interpretation of the intention of a legislature as manifested in a statute, is a work in which any judge, not more than human, might err. In conclusion, we would advise machinery furnishers, as well as purchasers, if they wish to ascertain when a lien will arise for machinery and fixtures, to consult the statute of their own state and the decisions of the courts construing it.—*Lumber World.*

At a recent meeting of the American Society of Civil Engineers, a paper was read on Mexican Bridge Construction, by J. Foster Flagg, M. Am. Soc. B. E. The bridge was remarkable from being the work, from his own design, of an ordinary uneducated Mexican laborer or peon, combining, as it did crudely, several principles of bridge construction. Bridges in Mexico are generally built of arched masonry, anything like a truss, being, before the advent of railroads, almost unknown. In the State of Colima, where this particular structure was built, there were very few bridges of any description, and those few the ordinary arched ones. The peon referred to was, some four years ago, the ferryman where a trail for cargo mules crosses the river Armeria. He happened to see a copy of *Harper's Weekly* that had in it an illustration of a suspension bridge. As a result of his study of this picture, he put up a structure quite closely imitating the ordinary suspension bridge; the cables and suspenders being twisted from wild vines (*vejucos*), the cables being passed over rude frames for towers, and anchored to huge boulders in the river banks. The whole structure was built without nails or metal of any kind. It was carried away by a heavy freshet the same year; and directly afterward, the same man built another structure quite original in design. It was also put together without nails or metal. The cable was formed of wild vines twisted, and all the joints tied together with lighter vines, no manufactured rope being used in the structure. The piers were made by d iving light piles into the river bed, in the form of a square, tying them together with other poles, and filling with stone. The towers were natural forked sticks; the top fork being used to support the cable, and the lower fork to support the timbers. The timbers upon these forked sticks were really rude cantilevers, weighted at the shore end and supporting the timbers of the central span. The only point of attachment of the cable was at the center of the bridge. The roadway was of rude joists and boards, sufficient to pass one animal. The bridge was strong and rigid.

The paper was discussed by a number of members, and reference was made to bridges constructed of raw vines and cowhide in Peru and other South American countries.

AN OHIO RAT STORY.

A few days ago a gentleman who had noticed the signs of rats eating corn kept in a large open bin on his place, was much puzzled to account for their getting out, as, from the shape of the bin, while it was an easy matter to get in, getting out seemed impossible. The sides of the bin are very smooth and slope inward, making it out of the question for the rats to climb out. A day or two later, hearing rats in the bin, he made a slight noise and watched to see how they got out. One old rat ran from his hiding place on the outside of the bin to the top of it, and lowered himself down inside until he held on only by his forepaws and head. His friends, seizing his tail, climbed up by this rat ladder until the last one was out, when he drew himself out and scampered off.—*Fayetteville Observer.*

"You must have lived here a long time", said a travelling Englishman to an old Oregon pioneer. "Yes, sir, I have. Do you see that mountain? Well, when I came here that mountain was a hole in the ground." The Englishman opened his halfshut eyes.

NEWS.

The new flouring mills at Kilbourn City, Wis., are now running.

Waddell & McKercher's flour mill at Dominion City, Man., is burned.

Stephen Nairn has started up his new oat-mill at Winnipeg, Man.

Roantree & Holcomb have leased Pearce's mill at Brodhead, Wis.

Steele & Small is the name of the new milling firm, at Benson, Minn.

Bibb & Co., Westminster, S. C., will soon start up their new roller mill.

H. W. Pratt & Co. will erect a 400,000 bushel elevator in Minneapolis, this year.

It is reported that Henry Page and others will build a large mill at Fergus Falls, Minn.

Burned—Feb. 5, Darrah's mill, at Big Rapids, Mich. Loss $40,000. Insurance $15,000.

Discouraging reports as to the condition of winter wheat in Kentucky are being received.

The Crescent Mills at Hokah, Minn., start up during March, after being completely overhauled.

Burned—Feb. 3, Howland, Robinson & Co.'s mill, at Waterdown, Ont. Loss $35,000; insured.

The United States Mills, St. Louis, are using the Jonathan Mills' flour dressing machine.

Mr. Louis Gathman, of the Garden City Mill Furnishing Co., Chicago, has sailed for Europe.

Utah wheat is being introduced in the St. Louis market. Both spring and winter wheats are raised.

The Regina Mills, St. Louis (formerly known as the Atlantic), has started up and will run regularly hereafter

Jacob Dove's mill, at Concord, N. C., was burned recently, and he is making arrangements for building another.

D. & L. Higley have purchased R. C. Hatch's mill at Fayetteville, N. Y., and Mr. Hatch has retired from the business.

The boiler in McDaniel & Wright's flour-mill exploded Feb. 12, killing James High, the engineer, and wrecking the building.

H. P. Chapman, of Akron, O., has patented a flour-packer and assigned it to the well known firm, Howes & Ewell, Silver Creek, N. Y.

I. W. York, formerly of Kilbourn City, Wis., has removed his mill to Douglas Centre, where he has now a neat 50-barrel water-power mill.

David Fairbairn, of Spencerville, Ont., is making arrangements for the building of a new flour mill in the place of his recently burned one.

The North Star Iron Works, in Minneapolis, have been making extensive additions to their works preparatory to doing a larger business than ever before.

Comstock, Jr. & Co., of Milwaukee, succeed Lawson & Bell in the roller mill at Gallipolis, O. The mill is run by steam power and has a daily capacity of 150 barrels.

D. H. Caswell, of Nashville, Tenn., has just completed the large cotton seed oil mill at Macon, Ga., and claims that it is the only standard oil mill in the country. The work was so well constructed, and the plans so perfect that the insurance companies took it at 2 per cent. Mr. Caswell has also just completed the enlarging of the Trenton, Tenn, cotton seed oil mill, having doubled its capacity.

Our imports of flour into the U. K. last week were very large, viz.: 808,167 cwt., or 163,900 sacks of 280 lbs., being two-thirds of the wheat imports, a larger proportion than we have had for a long time past. With regard to our imports of American flour, instead of decreasing, as many were under the impression they would, they have been increasing, and last week's total shipments from the Atlantic ports were no less than 234,000 bags of 140 lbs., of which Glasgow took 112 bags, or nearly one-half. These figures do not include the California flour shipments, which are also important. Low prices do not seem to check the American trade, but on the contrary seem favorable to it.—*Millers' Gazette* (*London, Feb. 2.*

E. B. Whitmore, miller at the Emery mill, says the Three Rivers, Mich., *Herald*, has invented and patented a device to automatically regulate the supply of flour or middlings fed to all kinds of rolls The middlings are evenly fed clear across the roll, and is so arranged that when once set it will keep up a regular feed for hours without any changing or care. He has put in 33 sets into the Emery mill, and 15 sets into the Hoffman mill, and the work is very satisfactory. Mr. Whitmore is a practical miller of years' experience, and believes that his invention is one that millers will be glad to use when they know its good points.

Nairn's oat meal mill, in Winnipeg, is now in operation. It is the most extensive and complete mill of the kind in the province, says the *Free Press*, and an important addition to the industries of Winnipeg. The cost of the building and machinery has been about $15,000. The building is 50x50 feet and has four stories including the basement. The engine is of sixty horse-power and is from the establishment of Inglis & Hunter, Toronto, who have also supplied part of the machinery, other portions being supplied from Scotland. The boiler is supplied with water from a well sunk to a depth of 99 feet. The building is heated with steam, pipes being placed all through it at considerable expense.

The Westinghouse Machine Company, of Pittsburgh, report trade as opening remarkably active in 1885. Their sales for the month of January were 67 engines, aggregating 1752 H. P., which is certainly good for hard times. The Electric Light industry still continues to furnish plenty of business. Besides a large number of engines for lighting private establishments they have contracted for the following public stations: The Newton Electric Light Co., of Newton, Iowa, one Westinghouse automatic engine of 35 H.P.; the Champion Electric Light Co., of Springfield, O., two engines of 60 H. P. each; the Excelsior Electric Light Co., Port Huron, Mich., one 60 H.P. Westinghouse automatic engine; the Northwestern Electric Light and Power Co., of Omaha, Neb., one engine of 45 H.P.; the Weston Electric Light Co., Lexington, Ky., one 80 H.P. engine, being the second one within two years; the Brush Electric Light Co., of Buffalo, N. Y., also order two more engines of 65 H.P. each, making twelve Westinghouse engines in all, which are running in their principal stations.

Mr. Frank B. Hancock, of Casky, Christian Co., Ky., writes as follows: "If you hear of some *enterprising*, wide awake man with money, who wants to establish a mill, invite him to correspond with me. A good mill, of either medium or large capacity would, I am sure, pay here. Our nearest mill to this place, is 2½ miles, and that does not run all the time, owing to the lack of water. Several fair mills are in the county town, five miles distant; roads are too bad for customers to go there about half the year. A mill here would, therefore, secure a large business, located in the center of a large wheat growing country. Party owning mill should be prepared to buy and store wheat. Over 100,000 bushels could be obtained here easily. A first-class mill-site with never failing water could be obtained on the L. & N. R. R., near the station, with little if any cost to mill owner, and siding put in for the mill at any time."

W. P. Chisholm, business manager for the Waukegan Mill Company, Waukegan, Ill., was killed at 10 o'clock on January 31, by being whirled about a shaft at their mill in that city. The regular miller being sick, Mr. Chisholm set out to run the mill himself, starting it at about 9 30 o'clock. The engineer noticed at a little before 10 o'clock, that his engine was moving slowly, but supposed it to be from a choking of the stones, and that the miller would relieve it in a moment. He stood with his hand on the throttle for some time, and the machinery running still slower, he stopped his engine and ran to the floor above. Not finding any one he went to the next floor, where he found Mr. Chisholm's body suspended from the shaft. So tightly was it held that it required some minutes to effect its release. It is supposed that he had stepped upon a ladder to look into a bin, when his coat was caught by a belt and he was drawn against a shaft. He must have revolved for from five to six minutes, his limbs striking the ceiling and the sides of the bin at each revolution. His legs were stripped and his feet and one arm crushed, but his head and face were not disfigured. Mr. Chisholm was 36 years old, a native of Canada, but had lived in Highland Park and Chicago for some years. He was a member of the Chicago Commandery of Knights Templars. Waukegan Sir Knights have had charge of his body since the accident, and Eminent Commander Daniel Brewster broke the sad news to Mrs. Chisholm. A widow and three children, the youngest but two months old, survive.

MILLING PATENTS.

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

Issue of January 27, 1885.—No. 311,295—Dust Collector; W. Cook, Columbus, Ind. No. 311,229—Feeding device for Rolling Mills; W. B. Chisholm, J. Walker and E. H. Martin, Cleveland, O. No. 311,334—Elevator Chain; C.W. Levally, St. Paul, Minn. Nos. 311,335; 311,336; 311,337;—(Bucket) Elevators; C W. Levally, St. Paul, Minn. No. 311,365—Discharge Apparatus for bins, grain spouts, etc.; H. G. H. Reed, Milwaukee, Wis.

Issue of February 3, 1885.—No. 311,468—Device for unloading grain from vehicles; J. H. Brown, Chicago, Ill. No. 311,508—Roller Mill; J. D. Millar, Milwaukee, Wis. No. 311,626—Grinding-mill; F. Wilson, Easton, Pa. No. 311,670—Apparatus for Feeding Flour, etc.; A. D. Northrup, Carbon, Ia. No. 311,727—Grain Separator and Scourer; J. Damp, Ashland, O. No. 311,808—Middlings Purifier; E. T. Butler and F. McFeely, Philadelphia, Pa. No. 311,811—Flour Packer; H. P. Chapman, Akron, O. No. 311,829—Gradual Reduction Machine for grain, etc.; W. D. Gray, Milwaukee, Wis.

Issue of February 10, 1885.—No. 311,873—Flour Bolt; W. F. Cochrane, Indianapolis, Ind., and G. T. Smith, Jackson, Mich. No. 311,904—Grain Separator and Cleaner; L. Lockwood, Des Moines, Ia. No. 311,927—Pressure-indicator for Roller-mills; E. Strong, Kalamazoo, Mich. No. 312,048—Roller Mill; J. Warrington, Indianapolis, Ind. No. 312,215—Disentegrating Apparatus for Flour Mills; A. C. Nagel, R. H. Kaemp, and A. W. F. G. Linnenbrugge, Hamburg, Germany.

Issue of February 17, 1885,—No. 312,392—Roller-mill; G. T. Smith and W. F. Cochrnne, Jackson, Mich. No. 312,369—Combined Grain Separator and Smutter; H. L. Martin, Lancaster, Pa.

BOOK NOTICES.

The Sportsman's Journal.—For *twenty years* the *Turf, Field and Farm* has been under the same direction, and it has grown up with the breeding industries founded since the civil war. It also has largely influenced the wonderful development of turf, field, athletic, aquatic and other sports. No journal in the country stands so close to the breeders and track managers, and none more truly voices their sentiments. Having had so much experience, it always gives wise counsel, and its views command the widest respect, and are quoted throughout America and Europe. No paper of its class published in this country ever had so strong a staff. The best talent that can be found is employed in every department. The paper is unapproached in accuracy as well as in the vigorous expression of intelligent thought, and it is not a matter of wonder that its circulation should be greater than that of any other journal devoted to kindred subjects. The enterprise of the *Turf, Field and Farm* is not less marked than its ability, and it is a pleasure to find it so numerously read and wielding so much power.

We acknowledge the receipt of a copy of the annual report and statements of the chief of the Bureau of Statistics on the foreign commerce and navigation of the United States for the fiscal year ended June 30, 1884.

One of the handsomest and most unique and original ideas in chromo-lithography is the Columbia Valentine, just issued by the Pope Manufacturing Co., of Boston, Mass. The design is in twelve colors, from a painting by Copeland, of Boston, is mounted on a panel, and is a genuine work of picturesque art, representing, in three scenic sections, the morning, noon and night of 'cycling.

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MILWAUKEE, MARCH, 1885.

AT the close of the year 1884 there were 10,832 miles of railroad in India.

THE associated banks of New York city are now carrying a reserve of over $140,000,000, an accumulation of money that is earning little or nothing, and is a significant indication as to what extent the propelling force of active trade is bottled up in idleness. The New York *Commercial and Shipping List* says that a year of distrust and disaster has brought this condition of affairs into existence, and it can scarcely show improvement until a demand has been created for more trading capital and investments can be made without the fear of loss and depreciation.

WAR is often the means of advancing civilization. England, in carrying the war into Africa, is opening up the interior of that "dark continent" to the attention of the entire civilized world. England has thus far been unfortunate in losing so many distinguished soldiers, and the policy which sacrificed Chinese Gordon to butchery by barbarians is condemned in the severest terms not only in England, but in America. The world expects now that England will push the war in the most vigorous manner possible, and make El Mahdi pay dearly for his present ascendency.

THE intensely cold weather which has prevailed throughout the country north of the Ohio river has certainly had a very depressing influence on business affairs for the past sixty days; but now that it is past and "gentle spring" approaches, and navigation will soon open, we certainly look for better times. There are rumors of prospective wars in the eastern hemisphere, and if they should occur it will be to a certain extent beneficial to this country. It is to be hoped that this country will be spared the visit of the cholera, but it is scarcely probable that we can entirely escape from its ravages.

BEFORE this paper reaches many of our readers, a change of national administration will have taken place. The Republican party will step down and out, and the Democrats will step into power. What effect will it have on business? is the question that every practical American will put to himself. If it has any effect whatever, we are inclined to believe that it will be to improve business. The change being accomplished, political agitation will not depress business affairs. Those gentlemen who have so long held office will be ready to draw their accumulations out of bank and invest them in some enterprises, and the Democrats who have been building up fortunes in business will now have an opportunity to spend their money while in office.

THE BUDAPEST MILLS AND FOREIGN WHEAT.—The question of the wheats currently milled in Budapest was lately brought up in the Hungarian House of Deputies. On the 15th ult. a member regretted, during the course of a debate on the Budget, that the mills of Budapest no longer confined themselves to native wheat, and had come to grind much foreign grain of inferior quality. This statemeut was at once traversed by Deputy Wahrmann, the reporter of the Budget, who declared that he could not allow a statement so misleading, and so calculated to depreciate the value of Hungarian flour, to pass unchallenged. One fact alone would preclude the idea that Budapest mills now habitually ground wheat of inferior quality, and that was the universal favor in which the flour was held, a favor which, he made bold to say, had in the last few years been on the increase and not on the wane. Admitting that a certain quantity of Servian and Roumanian wheat found its way every year into Hungary, these stocks had been shown to be no more than the seventh of the flour exports of the country. As a matter of fact the greater portion of this foreign grain was never reduced in Hungary at all, but was merely warehoused pending its export to other lands. Their country was now, thanks to its railway system, becoming the storehouse and distributing agency for the trade of Eastern Europe, and it was perfectly natural that much grain should be received on its way west. Personally, he believed the Budapest and other mills of Hungary used less foreign wheat than ever, and he concluded by remarking that what non-native grain might be used could not be supposed to injure the quality of the flour, inasmuch as the Hungarian millers were notoriously adepts in the art of blending, and might be safely trusted to manufacture high-class flour from wheats which in less skilled hands might give only second-rate results. In his opinion, it was precisely this mastery of the art of mixing that had placed Hungarian milling in the front rank, and had elevated it beyond the reach of competion.

DEATH OF S. S. MERRILL.

Since our last issue the General Manager of the Chicago, Milwaukee and St. Paul Railway died at his residence on Grand Avenue, in this city, after a long illness. The universal sorrow expressed at the death of Mr. Merrill, and the marked respect shown at his funeral, evidenced the high estimation in which he was held.

For many years he had been the general manager of the most extensive single railway company in the world — a railway owning fully 5,000 miles of road. To that high position he had risen from being comparatively a common laborer, passing through the grades, of brakeman, conductor, etc., until the entire general management was entrusted to him. His skill and thoroughness, his real capacity for such a responsibility, was manifested in the success that attended his efforts, in the freedom from accidents, its almost perfection, through the ceaseless care and personal inspection of Mr. Merrill, whose tireless energy and sleepless vigilance has hardly a parallel.

It might be said of the St. Paul Railway, as it is of the Cunard Steamship line, that it never cost a life or a letter during its long career. Of the railway under the supervision of its deceased manager, it can be asserted that it has never sacrificed the life of a single passenger through criminal carelessness; nor was this state of things due to chance or luck. With Mr. Merrill it was *duty* to seek the welfare of the Company; to this end all his energies were bent. He knew and did nothing else than to strive, early and late, with incessant care, to guard the interests and further the welfare of the *Company* that had placed its entire management in his hands. His efforts were amply rewarded in the success that attended them and the high character borne by the road for safety, security and dispatch. Mr. Merrill "died in the harness" He sacrificed his life in the service of his employers. The Company may well say, "Well done, good and faithful servant," and the public, not only of Milwaukee, but of Wisconsin and the other States traversed by its tracks, echo the enconium so well deserved. Mr. Merrill's idea was to secure security and safety through strength, and in the fulfillment of that purpose was largely due the wonderful success of the St. Paul Railway. How absorbing this idea was in the man whose death so many regret, was singularly but forcibly illustrated during the last time Mr. Merrill ever drove out in his carriage. He attended the sham battle at the Cold Spring race course last August. There was an immense attendance. The grand-stand was packed with spectators, every inch of space being occupied. The appearance of Mr. Merrill, who had been ill for some time, was the signal for a spontaneous rising of a dozen people to offer him their seats, and he was forced into one against his will. He remained seated but a few minutes, when—entirely characteristic of the man and successful manager—he feared that the grand-stand might not be sufficiently strong to support the great weight upon it. He left it and wanted an examination made immediately, fearful that some accident might result; nor would he rest content until assured that it had been carefully inspected and pronounced safe. He over-exerted himself that day, and never recovered from the effects. On another occasion, when contracting for some passenger cars, he stipulated for such heavy ironing of them that the builders were astonished at what to them seemed folly. Not long after their delivery and use on the road, two of these cars were derailed and rolled down a steep embankment, turning over twice in their descent. They were replaced on the track again unbroken, and the passengers were scarcely injured. When the dispatch relating to the accident was received by Mr. Merrill and announcing the safety of the passengers, he exclaimed: "There—is the benefit of having good strong cars. Had they been common ones we should no doubt have had several passengers killed." He was overjoyed at the result of his own good judgment and foresight.

In the death of Mr. Merrill, Milwaukee has lost a citizen who for a third of a century has been identified with her interests and always faithful to them—a citizen she could ill afford to spare and whose death she deeply mourns.

IN a recent interview with Mr. Porter, of the L. C. Porter Milling Co., of Winona, Minn., Mr. Porter said:

"During the past three years especially I have made, and had made from many sources, experiments on the various kinds of wheat and flour produced. These investigations have been so practicable and convincing that I have fully adopted the hard Fife variety of wheat for milling, which contains from twenty to fifty per cent. more nourishing gluten substance than the soft varieties of spring and winter wheat. As to the climate, soil or locality, there is no soil or climate so peculiarly adapted to this nutritious wheat as Minnesota and Dakota. The gluten contained in the hard Fife wheat being so great over all others, I was induced to put out for seed last spring over 20,000 bushels of this kind of wheat for special milling, and intend to furnish the farmers of Minnesota and Dakota from 40,000 to 50,000 bushels the coming spring."

There are very few persons who know the value of a rich glutinous flour over a white, starchy flour containing less nourishment and not as profitable for the consumer.

THE San Francisco *Journal of Commerce* published its annual review of business on the Pacific coast, from which we extract the following in regard to wheat:

Of the hundred millions of acres especially suited to wheat culture found on the Pacific coast of the United States, California has the largest proportion—twenty-five million acres, or one-fourth of the whole. Oregon comes next, with eighteen millions. Washington Territory is given sixteen millions, Colorado and Idaho ten millions each, Montana and Utah eight millions, and Wyoming five millions. California is thus the banner wheat state of the West, and in 1880 and 1884 produced more than any other state or territory. Owing to careless cultivation, or rather to lack of proper cultivation at all, and to occasional droughts, the average production has been reduced to about sixteen bushels per acre. Twenty, however, is the average of good land, with any ordinary care taken in cultivation, while the yield is not infrequently thirty, forty, fifty, and it has even ran as high as sixty bushels per acre. In fact, quite a respectable proportion of farms returned sixty bushels per acre as the average of 1884. And this all comes without the use of fertilizers of any kind.

The heart of the wheat lands of the Pacific is found in California, in the Sacramento and San Joaquin valleys, where there are fully thirty million acres of land—twenty million of the best wheat lands in the world. The soil is of two classes—adobe and loam. The former hold moisture and produce crops when other soils are almost useless from drought. The loams are light and friable, and in ordinary years superior to the adobes. Both are found all through these vast plains —the loam being found mostly along the river and creek bottoms. Some of these soils are practically inexhaustible, yielding thirty to fifty bushels per acre for twenty years, and that without the use of fertilizers. Not to speak of the thousands of fertile coast valleys, there is here, inclosed by the snow-clad summits of the Sierras and the blue peaks of the Coast Range, a mighty empire, which can support, in years to come, its teeming millions.

THE RUSSIAN CANAL SYSTEM.—The magnificent canal system possessed by Russia is not generally known. All the great rivers are interlaced by spacious artificial waterways, the magnitude of which may be estimated by the fact that several thousand barges, many of more than 1000 tons capacity, make their way every navigation season from the Volga to the Neva. The cost of maintaining the waterways in a good condition is by no means small, and every year a special sum is usually allotted for improvements. This year the amount will be 2,224,000 roubles, or 225,000*l.* sterling. Of this, 67,000*l.* is to be expended in constructing canals connected with the rivers Vitigra and Kovji, 15,600*l.* in improving the River Vitigra itself, 25,000*l.* in improving the River Volga, 21,500 in embanking the River Dnieper below Kieff, 8000*l.* in rectifying the course of the River Pripet, 20,000*l.* in improving the River Dniester, 12,000 in improving the River Vistula close to the Austrian frontier, and 22,000*l.* in surveying various parts of Russia for new canals. Three years ago General Tchernayeff, then Governor-General of Turkestan, reported to the home authorities that the communications of Central Asia might be considerably improved by the appointment of a well-boring corps to open up wells along the road in the provinces ill-provided with water. He pointed out that many districts in Central Asia bore wrongly a bad reputation as "waterless;" asserting that they were simply "well-less," and affirming that if wells were sunk in different directions the supply would prove amply sufficient for the wants of the country. His recommendation was acted upon, and since then Government engineers have been busily engaged sinking artesian wells. According to a telegram from Tashkent this week one has just been completed in the "Hungry Steppe" between Tchinaz and Djazak, 434 feet deep. The water, on being struck, rose to within 50 feet of the surface, the usual depth of wells in the steppe, from which it will be pumped by a small wind-propelled apparatus.—*Engineering* (*London*).

DEPRESSION IN THE ST. LOUIS FLOUR TRADE.

The *St. Louis Republican* of Feb. 16 says: Two weeks ago the flour trade in St. Louis was booming; there was a good foreign demand and a heavy inland trade; the prospects were brilliant for a good season and millers began to work full hours. Flour had reached the bedrock of low prices during closing days of 1884, and it was thought that lower prices were impossible. The brisk upward movement that set the wheels going for a while was of brief duration; a strong decline set in and the bottom fell out of the entire flour trade. As a consequence, nearly all the mills in St. Louis and vicinity are shutting down, and it is safe to say that by Monday not a single mill owned by members of the Exchange will be running full time. Various explanations are given by prominent millers, but the situation seems to be as follows: The foreign demand has ceased entirely, and domestic buyers are taking only so much flour as they actually need—are buying from hand to mouth. There is, consequently, no possibility of disposing of flour even at cost and as consumers, seem to think that present prices will prevail until the new crop comes in, the most sensible thing to do is to shut down. Some millers attribute the whole difficulty to the extremely cold weather now prevailing, by means of which all communication is shut off. The millers, speaking generally, say that everything is too cheap, and that if wheat to-day was worth $1, business would be better all over the country. It is impossible to sell the flour at a profit at present, they say, and hence they might as well wait until the prospects become better. One large milling firm said they received a large cable order recently, but declined to fill it because it left no margin of profit.

THE REV. JOHN E. TODD, of New Haven, Ct., says that the average college student at the time of graduation can no more write good English than he can read Greek, and knows about as much of the history and institutions of his own country as he does about the Latin authors of the Lower Empire. "Wholly unfitted for real life, as well by his training as by his habits, and unable to read any literature with ease and pleasure, he finds that, like a boy with the measles, he has something which nobody else wants, and which is is of no use to himself. His best course, if he means to become a man, is to forget as fast as possible the most of what he has learned, and to make up for lost time as best he can."

[Furnished for the UNITED STATES MILLER.]

THE TARIFF.

EXTRACT FROM A LETTER TO A UNIVERSITY STUDENT, ON THE AMERICAN PROTECTIVE TARIFF.

MILWAUKEE, Feb. 12, 1885.

My Young Friend:

In reply to yours, as to the "trifling character of some of the statements of Protectionists," that "trifles are too much dwelt upon"; that "great principles are ignored or lost sight of in the discussion of, and in debating of the tariff question," etc., etc., I acknowledge that our protective tariff question is too often treated in a light and flippant manner, as if the industries, and manufactures, and the employment of the labor of the country were but trifles of but little importance.

And yet, our American free traders must deem them of vast significance to England, or they would not labor so hard in unison with the Cobden Club, to get them transferred to England. They are not trifles. They are the pivot wheels upon which our nation has moved and run so prosperously.

The farms, the mines, the furnaces and the factories are the foundations, the sources—in truth, the fountains of our national prosperity.

To some they may appear as "trifles", but to others as "confirmation strong as Holy writ."

If you have read the lectures of Rev. Morley Punsheon, you, perhaps, will remember the passage where, addressing young men, he said on this subject of trifles:

"A trifle! Yes! but are not these trifles sometimes among the mightiest forces in the Universe? A falling apple, a drifting log of wood, the singing and puffing of a tea-kettle. Trifles all—but set the royal mind to work upon them, and what becomes of the trifles then? From the falling apple, the law of gravitation; from the drifting of a log of wood, the discovery of America; from the smoke and song of the tea-kettle, all the hundred appliances of steam."

Now, my young friend, let us see how "trifles" may have affected us—let us trace out a few facts. From that floating log, pointing the way to the shores of the American continent sprang the English colonies, their settlement. After many years, their grievances, called "trifles" by the King, Lords and Commons (not all of them) of England, Then the enunciation of the colonists' ideas of political rights—"Life, Liberty and the Pursuit of Happiness,"—words defiantly dashed in the face of despotism, in answer to the denied "trifles" claimed by the colonists, to make their own hats, clothing, hob-nails and to slit their own iron. Then came revolution. Then the trinity of Faith, Hope and Charity played their part—Faith inspired the colonists to declare war for human rights; Hope sustained them during their long and trying struggles and sufferings through the American Revolution; and when independence was achieved, Charity—God-like Charity, inspired them to make this country a city of refuge, to which the persecuted and oppressed of all lands, who sought permanent homes, could flee, and to which, as Mr. Bright said, twenty years ago, upwards of two and a half millions of British subjects have emigrated in fifteen years, every one of whom, Mr. Bright says, have attained a prosperity here, they could not have obtained in their native country.

My young friend, your conclusions are the natural results of erroneous tuition—errors that will be removed when you have contended with the practical in human life; when you have confronted the realities of the world, in which you must rise or fall—sink or swim, as your practical efforts will elevate or depress you.

You quote to me the statement of a gentleman, who, speaking of our protective tariff said:

"It works harm to the very interests it pampers. All students, teachers and philosophers not warped by interest condemn it. It is a relic of barbarism—a notorious wrong."

It would be difficult to crowd more error into the same space. It is the language of charlatanism, void of fact. No nation has progressed industrially as the United States since the tariff of 1861, and we are now the greatest manufacturing country in the world, having beaten England in a single year more than a thousand millions of dollars in products. "America is passing us at a bound," said Gladstone in his "Kin Beyond the Sea." Mulhall, the great English free trade statistician, says: "Every time the sun sets on American soil, there is $2,500,000 added to American wealth, more than one-third of the increase of the wealth of the world." John Bright says: "America is the home of the working man," and, "labor is there honored more than in any other country." The president of the Cobden Club bears his evidence to the "sober industry of our people," our "devotion to peace," and that, while in this country, "he regained confidence that the English race was destined to lead the van in progress." Lord Coleridge, England's Chief Justice, after viewing the condition of our people, etc., "that our artisans owned their own cottages," etc., etc., that he "would never see the like in his dear old England," exclaimed with fervor, "What a state of satisfaction and content in time of peace! What an irresistible force in time of war." Coleridge is a member of the Cobden Club, eminent as a lawyer—a profession the most highly protected in the world. Perhaps you, or the gentleman you quote, can point out how either of those persons I have cited is "warped by interest"; or wherein it is just or even truthful to pronounce our tariff a "relic of barbarism." Is every civilized country in the world retrograding to "barbarism"? All have recently passed tariffs and of all nations England has the highest on several articles of foreign make. Is our democratic, free-trade Senator, S. S. Cox, of New York, who recently introduced a bill to restore the tariff on ready-made clothing—because its lowered grade had brought want—almost starvation, to several thousand cloak makers in New York city—wives and daughters of his constituents—is he a barbarian? Was Hon. Geo. L. Converse of Columbus, Ohio, a prominent democrat, "barbaric" in his efforts to restore the '67 tariff on wool? Are Randall and Voorhees and many others, all democrats, are they barbarians?

I call your attention to these facts to refute the foolish flippancy you quote. It is one of those "clamors with which demagogues love to thrum our ear drums"—a sort of frothy frescoing of other people's statements, fit only for simpletons, who, like young birds in a nest at the slightest sound open wide their mouths and swallow whatever is given them.

The world is made up of trifles—in fact is but an aggregate of atoms, material and human. The greatest danger to which a young man can be exposed is that of wrong tuition. It often makes them "aliens" in sentiment, instead of Americans in fact. I quote to you what I have often publicly said:

"This government was formed in violation of all known governmental precedents; from no known hypothesis nor from any professor's brain was it born. It was simply and solely the practical application of human rights, under human protection, to human beings." Referring to professors, etc., teaching free trade in colleges, etc., to advance the interests of a foreign country more than our own, I said: "A charitably disposed mind may leniently judge the efforts of foreigners to destroy our industries in striving to benefit their own. American patriotism is severely taxed when asked to condone the crime, or mitigate its condemnation of the efforts of American born or naturalized citizens, when directed to the injury of the interests of their own country for the advancement of foreign countries. To trust the tuition of our youth to such persons is a misfortune if not a national calamity. An ordinary American citizen, teaching an American boy that his first, or equal duty, is to other than his own country, commits an almost unpardonable error; such an instructor may plead ignorance in palliation. But when a preacher, college or university president, a professor or school teacher, one trained, taught, and paid to instil sound principles into the minds of young Americans, to inspire love of country, desire for the promotion of the general welfare of his own country and people; when such a one teaches that our youth should be as ardent for the promotion of the welfare of another country, sometimes more so than for his own; that man, be he who he may, is guilty of high treason. He, I say, is unfit to teach American youth; he is un-Americanizing them; he is destroying the *amor patriæ* of our youth, our rising generation: those upon whom depend the perpetuity of American liberty and free government. If the political economy taught by many professors in American universities, colleges, and schools,—that American legislation should be as solicitous for the prosperity of England, and as desirous of promoting her welfare as for the prosperity and promotion of the welfare of our own country,—is correct, then I say the declaration of independence was a political paradox, a fulsome fulmination of fools, and the bloodshed in the American revolution was an inexcusable, wanton, wicked sacrifice of human life."

Has it never occurred to you, that the aim of the British freetraders, as represented by the Cobden club of England, is the destruction of all American industries and manufacturers? Do they not announce they will "never rest while the United States are unsubdued." Do you desire to aid such a result? Do you realize that the success of the freetraders, of England and America, would certainly produce that result? I ask you, I entreat you, to read the history of our own country, carefully, thoroughly, not superficially. If you do so, you will, I think, agree with me, that all of our greatness, freedom, happiness and prosperity, is substantially due to the grand humanity upon which our government is founded: to the development of American raw material, the encouragement of American manufacturers and the protection of American labor.

Faithfully Your Friend,
JOHN W. HINTON.

NASHVILLE MILLING NOTES.

There is considerable gratification to the millers of our city in realizing the fact that although business is remarkably dull almost entirely throughout the Northwest, that our mills are kept actively engaged at full capacity to supply the demand throughout our Southern territory; and it is a warrantable fact also that the qualities must be equal to all competitors, by the constant demand for our mills' products, considering that a vast amount of outside flour is constantly arriving and running indirect competition with them.

Nashville naturally looks with pride on all her industries, and justly so indeed toward the producers of the product which gives us the "staff of life" in all its purity, viz., good flour.

The Lanier mill drives ahead under full sail, with no mention of dull times, while the Nashville still continues to hum constantly under the cheering ejaculations of our irrepressible John J.

Up the line E. T. Noel's mill continues to impart music to the busy hoard of operatives in response to orders constantly pouring in.

Still further on, the New Era lies, as it seems, asleep; but within, the busy hammers and saws of many millwrights can be heard, hurrying (almost against time) to prepare her to again join the ranks of her companions in the production of flour.

She is being refitted to a full roller mill, and anxious eyes are directed toward her completion, and a very short time will see her again in operation. Most of the machinery has arrived and is being placed in position, and Mr. Case (who has the contract) thinks that few mills in the country will surpass her in excellency of milling products.

The City Mill is also running on full time, and although she is now a buhr mill, rumor has it that at no distant day Brother McIver thinks of joining the ranks of roller mills, by having the "City" built over to the full roller system.

Still further might be mentioned that in the near future Nashville will awaken to the fact of the existence of a new corn meal mill, operated under the roller process entire. The writer is familiar with the facts as far as they are presented, but withholds the names of the projectors until permission is given for publicity. Suffice it to say, figures have been presented in the enterprise, and further developments are awaited.

Undoubtedly the undertaking will prove successful and profitable from the start, as it is one that is much needed in the South, where the best corn in the country is grown, and where also people have formed an attachment for the use of the meal in bread in various forms. The roller process on corn produces meal very different to that made by the use of millstones as now employed.

The object is to relieve the corn of all its bran and germ by first producing hominy, then reducing said hominy to grits by several reductions on rolls. The flour produced in reducing is removed by the aid of the bolting reel or centrifugal, and the grits are further cleaned by the aid of purifiers. The process resembles very much the same as employed in gradual reduction on wheat, though of course not requiring so much manipulation, as the aim is not to produce flour from the corn, but nice sharp granular meal.

Our friends at the Shamrock mills are also awakening to the roller process, and a possibility remains that ere long all of Nashville's mills will be roller mills.

Messrs. Williams & Co., of this city, have sold in the last three days 190 car loads of wheat, 500 bushels to the car, making the enormous sum of 95,000 bushels. This is the largest transaction in grain that has ever been recorded in this market in any three days, and speaks well for Nashville, and shows that she is becoming one of the leading grain centers of the country; and with the live grain dealers in the Nashville market, the farmers and grain dealers in the country can send their grain to Nashville with the assurance that they can always find a buyer.

It is announced that the Rizer mill property at Franklin, Tenn., is to be sold soon.

This is a new and splendid mill, constructed after the best models, patent roller process, and every equipment found in a country mill, and some one or some company will get a bargain and make it pay them for the investment.

It cost originally about $30,000, and consists of a four story and a half mill, two commodious warehouses, a private side track to the mill and warehouses, and about three acres of land.

It is to be sold by the Chancery court for the benefit of parties interested.

Our enterprising elevator men have recently added to the elevator a device for drying for damp wheat that may come to the elevator storing. The process is patented by the Chase Elevator Co., of Chicago, and this is among the first to be erected. Mr. Talmage is here now experimenting and operating with it to render it perfectly effective in all its requirements (Talmage is the Chase Elevator Co.'s agent). as upon its success hinges the immediate erection of various others throughout the country, particularly in the North and Northwest.

As far as the operation of the process has been developed it seems to have rendered satisfaction, and it is anticipated, especially by our Nashville parties, that in the event it is eminently successful it will prove of incalculable value to both the patrons of the elevator and the company.

The wheat supply for the mills continues ample for the demand, the principal bulk of which arrives from Kentucky, and the stimulus added to the market in its upward tendency has the effect of making the holders of grain ship in large quantities, thereby gaining the advantage of the rise, however premature the upward tendency may prove. —*By* ROCK CITY *in Southern Miller.*

SMOKE.—"Smoke," an engineer said to me the other day, "is due primarily to free carbon. This escapes unconsumed from the fire and stains the aqueous vapor that arises from the stack. Yes, I'm inclined to think that much of the smoke complained of in large cities could be done away without any changes anywhere except among firemen. The great mistake of manufacturers is that they place a coal-heaver and a fireman on the same dead level of value. Instead of hiring competent and intelligent firemen at good wages, they will take almost any man that offers his services at poorhouse figures, and who has strength enough to shovel coal. This class of employes is the dearest at any price that ever worked in a manufacturing establishment. To give you an idea: Not long ago a local manufacturer sent for me to come and see what was the matter with his boiler. I went down and found that they couldn't raise more than forty-five or fifty pounds of steam. There was nothing wrong with the boiler, so I went to the fire. Here the whole thing became plain to me. The fireman had overloaded his fire and ruined the draft. I told the proprietor he would have to shut down, to which he gave a reluctant and very profane consent. I drew out the fire, built another one, and when we blew off, the boiler was carrying eighty pounds of steam, more than was really needed. This is only one of a number of instances I might point out from personal knowledge. Really, I wouldn't want a better thing than the privilege of firing all the boilers in St. Louis and Chicago at fifteen to twenty per cent. below the present cost to manufacturers, the firemen to be selected by me or my representatives.

"The main point in striving for perfect combustion is to ignite and consume the carbonic oxide. First, we burn the carbon, and next we should consume the carbonic oxide, leaving carbonic acid. This can only be done by introducing hot or atmospheric air (the former preferable) into the gases, so as to produce the second or after combustion." —*Quidnunc in St. Louis Age of Steel.*

PORCELAIN ROLLS.

In 1874 porcelain rolls were introduced in German mills by their inventor, Frederick Wegmann, formerly of Naples, Italy, and now of Zurich, Switzerland. They effected a great revolution in milling. Porcelain rolls are now used all over the world where fine grades of flour are made. *Die Muehle* says that Wegmann was also the means of bringing into use the system of roller milling with chilled iron rolls. Ganz & Co., of Budapest, the largest manufacturers of milling machinery in Europe, manufactured and sold chilled iron rolls, under Wegmann's patent, for a considerable length of time.

"Chilled iron or porcelain" for rolls has been a question for extensive discussion, but now each has found its appropriate place. Chilled iron rollers, corrugated, do excellent service for producing middlings, while porcelain rollers are unequaled for the reduction of middlings. In recent legal proceedings before the German Patent Office, the Court said: "It is well known that the introduction of Wegmann's porcelain rollers has been of great advantage to the German milling industry, and the advantages derived from their use are so great that the loss inflicted upon Germany on account of their manufacture in foreign lands cannot be estimated." A higher compliment could scarcely be paid to the distinguished inventor.

MILL DIAGRAMS,

The diagram which shows graphically the course of the stock in the mill, *i. e.*, the various reductions and separations, has made its appearance, in a common way, to the millers of this country since the introduction of the purifier. It was the purifier which complicated milling. The purifier increased the number of reductions and separations in a mill where the wheat merely passed through the burrs and a reel sent the flour to the packers from one end and the feed and the middlings from the other, to an almost endless number. According to the older system it was possible to describe the run of the stock in the mill, in a very few words, without the danger of being misunderstood. Now, if a mill-furnisher desires to explain his method of reductions and separations to a miller, he elaborately pictures his ideas on paper, and it takes time and skill to do it. He explains the diagram to the miller, who ponders over it, and perhaps understands it and perhaps not. The diagram is the vehicle of the thought of him who would arrange the reductions and separations. It shows the number of rolls and the millstones, and states their size and dress; it shows the course of the stock, and indicates its quality in the separators; gives the classification of material, the clothing of the reels, the course of the conveyors, and all matters pertaining to the movements of the stock. If a miller wishes to make changes in his milling, it is not now so common a thing for him to walk through the mill and tell somebody how it is to be done, stating that the stock from this reel will go into some other which he points out, and so on, or that he will change the stock from one roll to another. He goes to some quiet place, determines what he wants to do, and draws out the course of the stock on paper, thus forming a record of his ideas for the guidance of his employees. This is an intelligent way to act, and is the course adopted by many millers whom we know.—*The Modern Miller.*

THE OATMEAL INDUSTRY.—All the oatmeal mills in the country said a gentleman at Des Moines, Ia., the other day, are running slack just now because this is what is considered the slow season of the year in the business. Just now the product is being run down as low as it is possible to do it. But it is not a bit more quiet in the trade than at this time last year. It has been reported in the papers that a combination has been formed to raise the prices. This is a mistake to some extent. The meeting which has been referred to was a meeting to organize for the same purposes as the other millers have organized, and also to equalize prices over the country. The process of equalization will not increase the price of meal at Des Moines, and may reduce the Ohio prices slightly, and also increase slightly at other points. Our mill has a good western trade, and we are just now loading a car for the mountains. A car, in barrels, is worth about $500. The manufacture is comparatively a new thing in this country. At the close of the war a little Canada oatmeal was sold in the East. The Shoemakers, of Ohio, were the pioneers, and went into the manufacture heavily. Twelve years ago there was not an oatmeal mill west of Ohio, and now they are everywhere, so the product has grown cheaper each year. The export to foreign countries has increased right along, but it is not very profitable, and I think is not pushed except when the home demand falls off, or the production is too heavy. Foreigners don't buy this or anything else as Americans do. If the price is a cent higher than usual they don't take it, while in this country if a man wants a package of meal he buys it at once without asking the price. We look for a fair business through the coming season. The stocks are nowhere very heavy, and the demand is increasing right along, as it ought to, for it is the finest food in the world for many people.

STOCK BROKERS MUST NOT DRINK WHISKEY—"Men who drink whiskey are sure to go to the wall sooner or later on the street" is the testimony of Henry Clews, the Wall street broker. Men in the stock business have excitement enough without any artificial exhilaration by the use of alcohol. I have no objection to a glass of wine at dinner. No man should drink in business hours. In the long run whiskey will ruin a man physically and financially. Too many men on the street drink to celebrate their success and to drown the memory of their reverses. There is no other time when a man needs all of himself as much as when he has been unfortunate. Then, if at no other time, he should eat the best dinners, attend the opera or the theatre, and keep himself in the best spirits and health possible. But keep clear of the bottle! I always win when I have whiskey for my competitor."—*Philadelphia North American.*

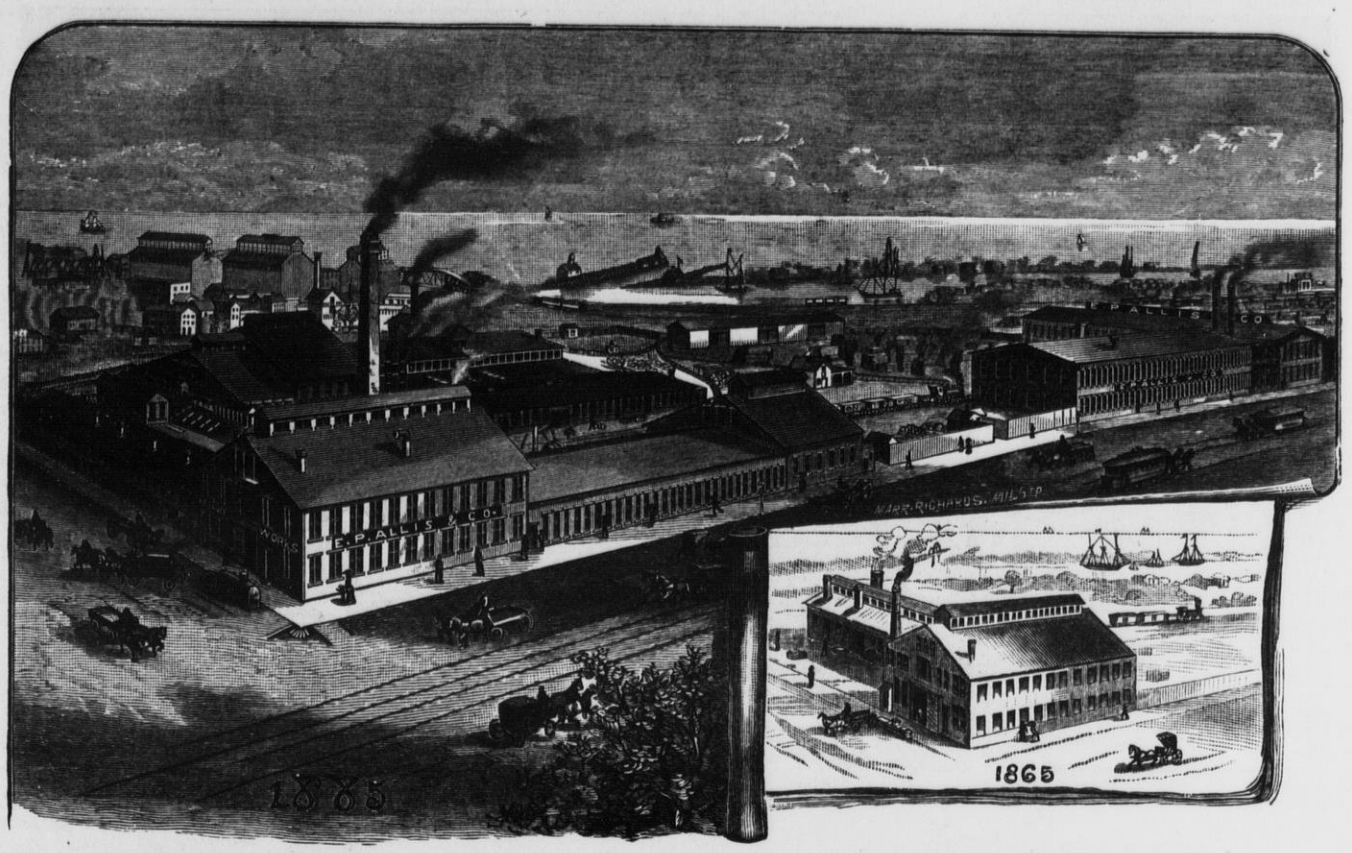
WHERE THE GRAY NOISELESS ROLLER MILL IS MADE.

It is hardly necessary to inform any interested in the milling trade that the world renowned Gray roller-mills are manufactured by the well known firm of Edw. P. Allis & Co. of Milwaukee, Wis., but many have but a faint idea of the great amount of capital invested and works performed at their roller-shops or the great number of roller mills built by them, roller-mill building being only a branch of their manufactory. The fine illustrations presented herewith, will give our readers a good idea of the extent and importance of this roller-plant, which was originally called and is still spoken of as the Bay State Works. The main building is built of Milwaukee brick, is 260 feet long by 50 feet wide, and is three stories high; adjoining it is a one-story frame buildinge 250x50 feet, used as a finishing shop and ware-room.

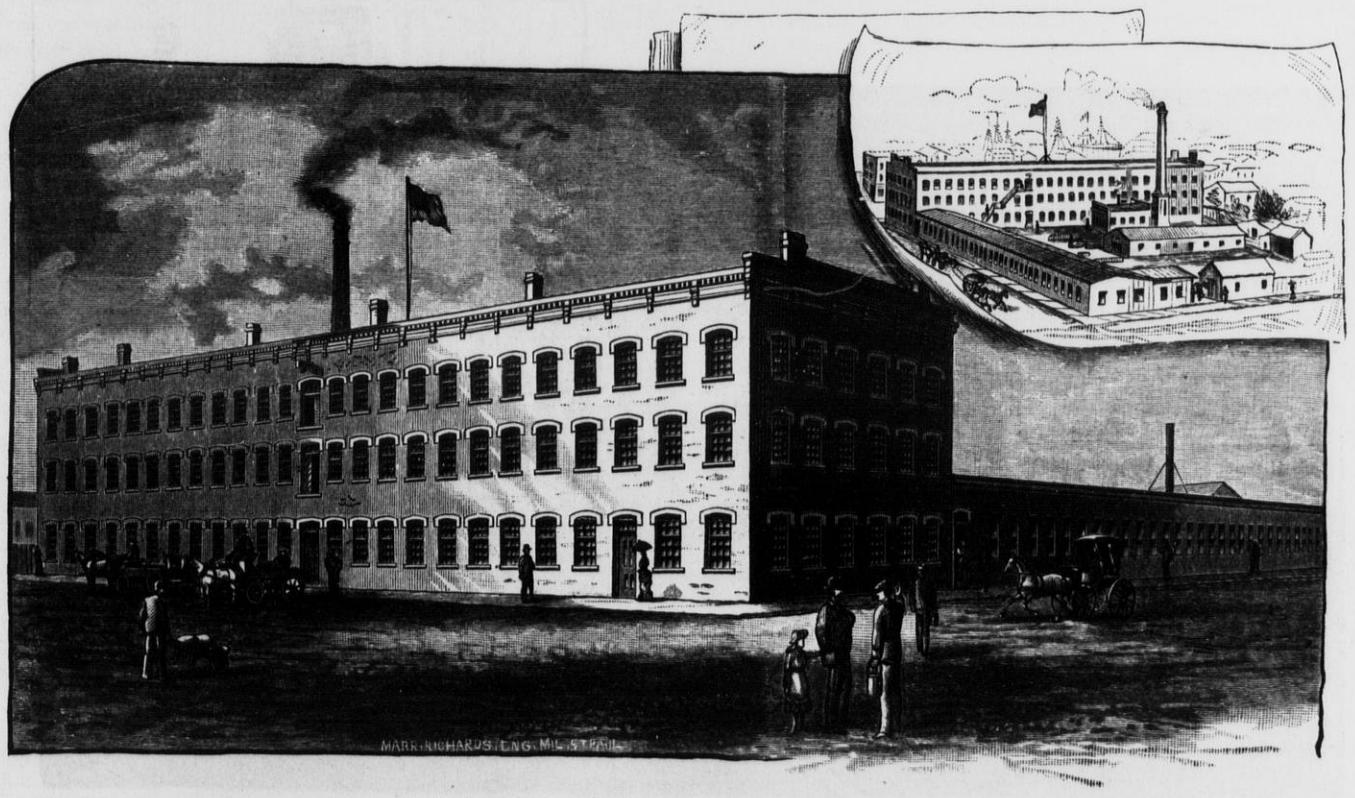
Passing through the main entrance and by the office, the visitor enters the first floor. Here the roller mill frames are brought from the foundry and are fitted for receiving the wooden hoppers and the minor details of iron work entering into the construction of the machines. This floor is well equipped with special tools, each designed with a view to doing a maximum amount of work with a minimum amount of labor. Special lathes, planers, drilling machines, etc., are all kept busily at work under the careful attention of skilled mechanics, each especially trained to do his stated share of the work of building the complete machine. On this floor also are found the special tools required for turning, grinding and corrugating the chilled iron rolls which are the prominent feature of all roller mills. Messrs. Allis & Co. have but recently turned their attention to the manufacture of the rolls themselves, and the works are not fully equipped with lathes for turning the chilled rolls. But a very small portion of the rolls are made here, the greater portion coming from Ansonia and Wilmington. The outfit of grinding and corrugating machines is the largest in the country outside of the shops making a specialty of furnishing rolls only. The grinding and corrugating tools are of the latest and most improved pattern, and the works have abundant facilities for handling not only their regular work, but also the large and growing roller repair trade. All possible pains are taken to insure perfection in workmanship, the result being that rolls are sent here to be refitted from all parts of the country.

Ascending to the second floor, the visitor sees long lines of lathes planers and drill presses, and the whole room thronged with busy workmen. This floor is devoted entirely to the fashioning of the smaller pieces of iron work required to complete the machine. Hand-wheels, bolts, rods, levers, feed rolls, boxes, etc., each have their appropriate machines. On this floor are also the lathes and grinding machines for fitting p the Wegman's porcelain rolls, for which Messrs. Allis & Co. are sole agents in this country.

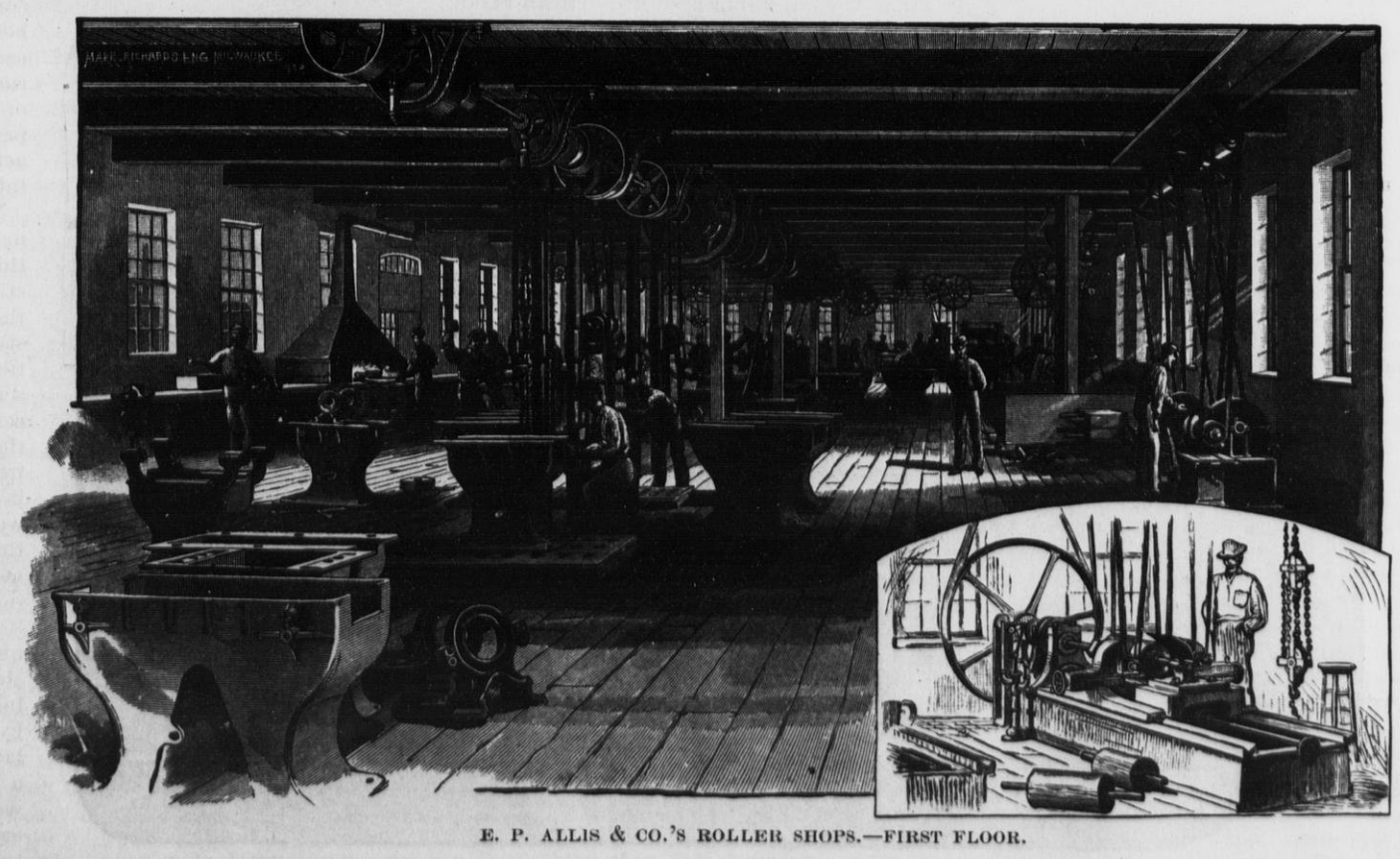
The third floor is occupied by the pulley lathes and grinding machines, and is used also as a store room for finished pulleys and other small parts of the machines. The whole building is now and has been for the past five years as busy as a bee hive, the working forces averaging over two hundred trained mechanics, working solely on the Gray roller mills. Passing out of the main-building on the first floor one reaches the finishing room. Here the machines are fitted with the necessary wood-work, the feed-rolls and other small parts put in place, and the machines painted and prepared for shipment. At no time during the past three years has there been a single machine in stock, all being called for on orders as fast as completed. At present, notwithstanding the low prices of wheat and consequently depressed condition of the milling industry, the shops are over one hundred machines behind orders. First and last, during the past five years nearly fifteen thousand machines have been built and shipped from these works going to all parts of America, as well as to England, Australia, New Zealand and South America. Taken as a whole, the Bay State plant fairly illustrates the magnitude of the milling industry, and is an object of interest to millers from all parts of the world.



RELIANCE WORKS, MILWAUKEE, WIS., AS SEEN FROM CORNER OF CLINTON AND FLORIDA STREETS.



E. P. ALLIS & CO.'S ROLLER SHOPS, MILWAUKEE, WIS.



E. P. ALLIS & CO.'S ROLLER SHOPS.—FIRST FLOOR.

WHAT THE SOUTH NEEDS.

What the South needs is not to crow and boast over the comparative trifles our people are now showing in the industrial system. We need a diversification of industrie to enable us to meet our home market, first of all. We don't make one ton in forty of the iron articles of utility our people use. We make none but the coarse grades of cotton and woolen fabrics, and those grades our mills have overdone to the point that they were forced to cut their labor 10 to 15 per cent., which was never at best, paid as much by 20 per cent. as average Eastern wages.

We don't mean to say the South has not done well since 1870, from which year her industrial history dates. But it would be dereliction of duty not to correct the erroneous and highly injurious notion being instilled into the people's heads, that this section is on the eve of becoming master of the iron and cotton goods markets of the country, when we have only a few fine furnaces, very few iron mills, and a total spinning plant about equal in capacity to that of a second-rate New England factory town. Tell the people what they can do with their magnificent supply of raw materials. Tell them what they must do before they cut any considerable figure in the industrial world. Do not, we pray you, eloquent but ignorant editors, try to persuade the South that she has become the prime factor, when her industries are yet extremely crude and by comparison a mere fraction of the great mass. The fact is, the South is in no sense competing with the iron and steel "mills" of the East and North, and only competing with their furnaces in a feeble, accidental and profitless way.

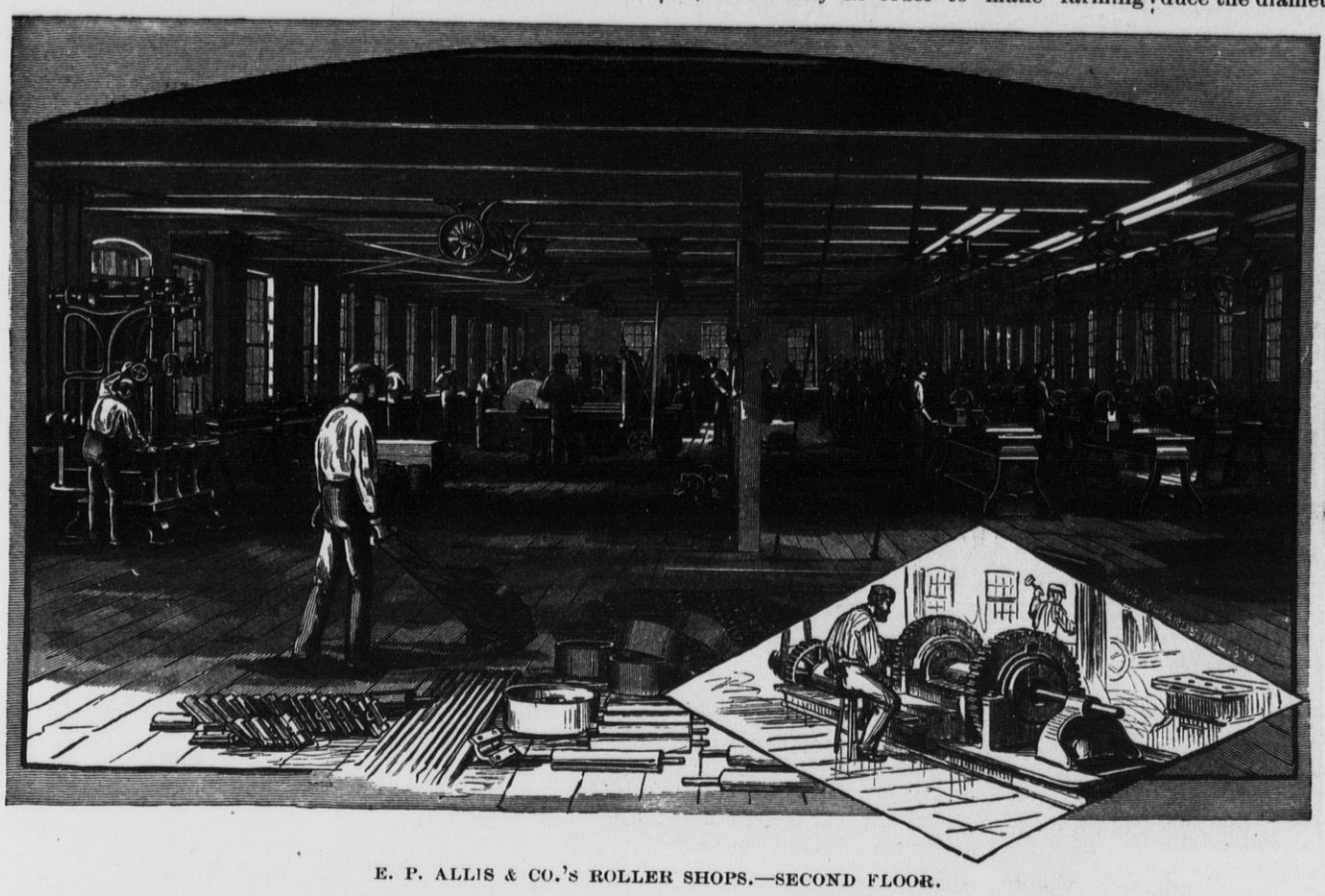
Our cotton goods do not come in competition with one yard in fifty made in Eastern and Middle states mills. It is time our enterprising people knew the facts of this situation. Pennsylvania and Ohio have more coal than the whole South. They own the only large beds of ores yet developed suitable for making steel by the Bessemer or open hearth process. If we were to close a few of their furnaces and go on buying their finished iron and steel we would get rich mighty slowly. —*Chattanooga Times.*

ONE of the duties of Judson Macumber, an intelligent colored man employed in the Austin, Texas, postoffice, is to cut a daily supply of kindling wood for the stoves in the building. A few days ago the supply was short. "Why don't you chop up two or three days supply of kindling wood, so we can always have some on hand.?" asked Col. Degress, the postmaster. "No, sah, I don't cut up no kindlin' wood for the day ahead. We am liable to hab our heads chopped off any minute, and I don't hab no kindlin' wood in the cellar for de democratic niggah what gits my place."

THE *Workingman's Journal* at Muskegon accuses a flour and feed firm there of having a very valuable cat, which steals onto the scales and remains there until the grain has been weighed.

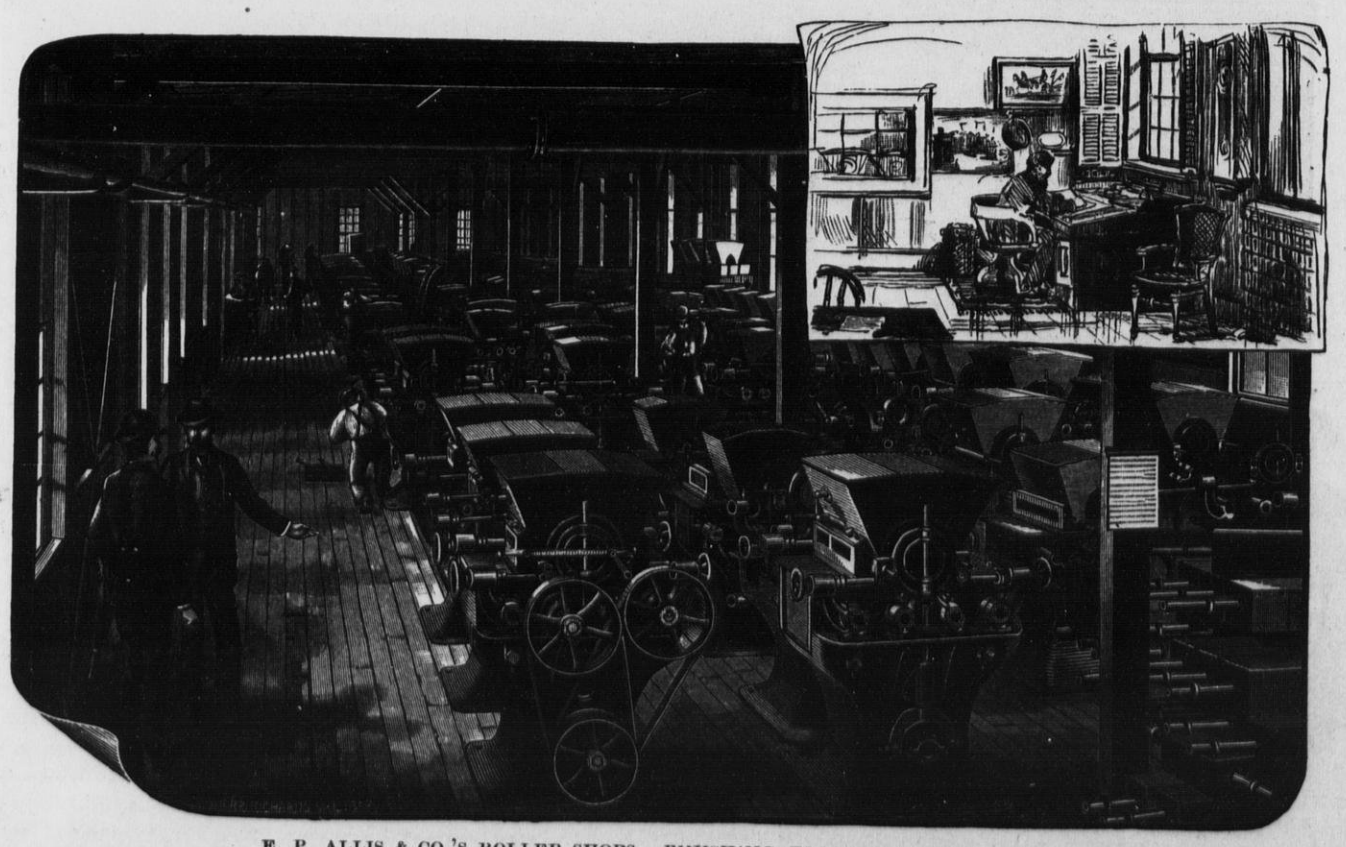
A SURPRISE IN A BOILER FLUE.

It is not often that surprises are met with in boiler flues, and the following incident which occurred to an engineer whose name has since, through his numerous inventions, become a very familiar one in the world of boiler engineering, we think is too good to be lost. He was engaged on one occasion in making a thorough inspection of a Lancashire boiler, and was passing up one of the side flues, pushing in front of him his flaming oil-lamp, when he suddenly received a terriffic blow on the head, which for a moment almost stunned him, and, to use his own expression, caused him to "see more stars at once than ever he noticed in the heavens." The blow was accompanied by a cry and a number of choice expletives, and he could not for some time think whether one of the boilers working along side had burst or the wall had come down upon his tingling pate. A series of imprecations, certainly loud if not deep, a little further up the flue soon brought him to his senses and to an understanding of what had occurred. One of the sweeps who had been engaged cleaning the flues, either through having imbibed an excess of "allowance" or being tired out and having found the position very warm and comfortable, had dropped asleep in the side flue, and had been very sharply awakened by our inspector's light touching his bare leg. These men often work with little of anything on in the shape of clothing beyond a few old rags, and generally wear their clogs while cleaning the flues. The rude awakening of the sweep by the sudden pain caused by the contact of the inspector's lamp with his bare skin caused him to kick out savagely, and his iron-shod clog coming in contact with the inspector's cranium had caused him to see the astronomical phenomenon above referred to. Whether the sweep who was so rudely awakened from his nap, or the inspector, who for some time could not persuade himself whether or not the boiler had fallen upon him, was the more surprised of the two it would be difficult to say. We make a present of the above true story to Professor Tyndall as being a remarkable example of heat being "made of motion," as the heat of the inspector's lamp unquestionably set the sweep's leg in violent motion, and produced a "bump" which would have been alarming to any phrenologist examining it without being made acquainted with the cause.—*The Mechanical World.*



E. P. ALLIS & CO.'S ROLLER SHOPS.—SECOND FLOOR.

E. P. ALLIS & CO.'S ROLLER SHOPS.—THIRD FLOOR.



E. P. ALLIS & CO.'S ROLLER SHOPS.—FINISHING FLOOR AND WARE ROOM.

WHEAT GROWING.

The very low prices obtainable for wheat have naturally somewhat disheartened the growers, and they are mooting the question whether they can afford to raise wheat or will not gain by devoting their lands to other crops; and the Pennsylvania school of protectionists is helping them agitate this question and openly preaches that there is an excessive production of wheat, advising the farmers to produce something else.

This is bad advice. One year's crop will not supply two years' consumption, so that the country may be said to be always within easy distance of starvation. Fortunately, the distribution of wheat is so general that a total failure of the crop can hardly occur; but none the less can the production be seriously lessened by natural causes. The demand is continually increasing, and if the supply is now excessive this is a temporary condition. To deliberately curtail the cultivation of wheat would, if carried to even a moderate extent, only invite disaster, strange as this may appear in a country where agriculture is so fruitful.

Not only is the demand continually increasing in this country, but Europe will want each year a larger supply for her population. As it is, England, France, Germany and Spain cannot under natural conditions grow wheat in competition with us, and while some of these nations are seeking to equalize conditions by tariff duties the English journals are full of a discussion on the question, "Can we grow wheat?" Duties can only afford a temporary protection; they will not increase the fertility of the soil. France now levies duties on wheat so high that she is only surpassed by Turkey, Portugal and Spain. Prince Bismarck proposes an increased duty in order to make farming more profitable, and so check the tide of emigration which he dreads so much. These expedients cannot keep back the inevitable, and American wheat will have an ever increasing market, and one which natural conditions—like climate, droughts, etc.—may give to it absolutely. No; the growing of wheat should be encouraged, and not discouraged.

THE WHEEL WORK OF MILLS.

Mistaken attempts at economy have often prompted the use of wheels of too small diameter. This is an evil which ought carefully to be avoided. Knowing the pressure on the teeth, we cannot with propriety reduce the diameter of the wheel below a certain measure.

Suppose, for instance, a water wheel of twenty horse-power, moving at the pitch line with a velocity of three and one-half feet per second. It is known that a pinion of four feet diameter might work into it without impropriety; but we also know that it would be exceedingly improper to substitute a pinion of only one foot diameter, although the pressure and velocity at the pitch lines, in both cases, would be, in a certain sense, the same. In the case of the small pinion, however, a much greater stress would be thrown on the journeys (or journals) of the shaft. Not, indeed, on account of tortion or twist, but on account of transverse strain, arising as well from greater direct pressure as from the tendency which the oblique action of the teeth, particularly when somewhat worn, would have to produce great friction, and to force the pinion from the wheel, and make it bear harder on the journals. The small pinion is also evidently liable to wear much faster, on account of the more frequent recurrence of the friction of each particular tooth.

That these observations are not without foundation, is known to millwrights of experience. They have found a great saving of power by altering corn mills, for example, from the old plan of using only one wheel and pinion to the method of bringing up the motion by means of more wheels and pinions of larger diameters and finer pitches.

The increase of power has often, by these means, been nearly doubled, while the tear and wear have been much lessened; although it is evident the machinery thus altered was more complex.

The due consideration of the proper communication of the original power is of great importance for the construction of mills on the best principles. It may easily be seen that in many cases a very great portion of the original power is expended before any force is actually applied to the work intended to be performed.

Notwithstanding the modern improvements in this department, there is still much to be done, In the usual modes of constructing mills, due attention is seldom given to scientific principles. It is certain, however, that were these principles better attended to, much power that is unnecessarily expended would be saved. In general, this might be in a great measure obtained by bringing on the desired motions in a gradual manner, beginning with the first very slowly, and gradually bringing up the desired motions by wheels and pinions of larger diameters. This is a subject which should be well considered before we can determine in any particular case what ought to be the pitch of the wheels. In the case above alluded to, where the supposition is a pinion of four feet diameter, or of one foot diameter, it is obvious that the same pitch for both would not be prudent; that for the small pinion, ought to be much less than that which might be allowed in the case of the larger pinion. It is also equally obvious that the breadth of the teeth, in the case

of the small pinion, ought to be much greater than that in the case of the larger pinion.

It is evident, however, that although great advantage may often be derived from a fine pitch, there is a limit in this respect, as also with regard to the breadth.—*Buchanan on Mill-Work.*

SWEET POTATO FLOUR.

A patent has been issued for a process of treating sweet potatoes for making flour, which is described as follows:

The object of the invention is to produce a wholesome and nutritious article of diet from the sweet potato, one that will not be liable to become frozen or decayed, and which shall embody all the valuable portions of the potato, essentially the starch and saccharine matter.

In southern portions of the temperate zones the sweet potato grows plentifully with but little cultivation, and is consequently in such localities cheap and common. In other portions of the country—that is to say, in localities where different temperatures and different degrees of moisture of the air obtain—the potato is a luxury, and when in the natural state difficult to get, except at exorbitant prices, owing to its liability to rot and freeze. This invention designs to so treat the potato that the starchy and saccharine matters, with a quantity of the glutinous portion, may be obtained and readily transported to any portion of the world as a staple product, similar to flour, and it being well known that chemical changes which accrue to the liquid portion of the potato in climates other than where it grew destroy its natural flavor, an essential feature of the process is to quickly evaporate such liquids while the potato is in a healthy condition, and reduce it to a flour or meal which will retain the natural flavor of the esculent. The product obtained according to the invention may be made into puddings, pies, cakes, custards and the like, and is preferably prepared with salt, etc., before being placed upon the market. Being in the form of a flour or meal, it will keep for a long time in the manner of corn-starch or ordinary flour. The sweet potato is naturally an enlargement of a root, and has longitudinal fibres of a woody nature. The skin and the adjacent portion is largely composed of gluten. These portions are separated from the starchy and saccharine portions, according to the invention, and may form such another quality of diet material upon being properly ground.

In carrying out the invention, sweet potatoes are taken in quantity and subjected to heat, preferably in moving ovens, so as to obtain an evenness of the baking process. This congeals the gluten near the skin and causes the skin to shrivel and separate itself from the main portion. The skin is then removed, in any preferable manner or by any preferred machinery, and the main portions are again subjected to heat to evaporate the moisture. This being done and all the bulbs crushed, the longitudinal fibres will be in a condition to be separated by screening or otherwise, when the starchy and saccharine portions are ready to be ground, crushed, or otherwise formed into a flour, treated with salt and yeast powder, and packed for the market, having been dispossessed of all moisture, but retaining the desirable natural elements. The steps which are the gist of this process are, first, baking to separate the skin, then drying or evaporating, then separating the fibre, then preparing into flour.

A LOGGER'S STORY.

"For a young man I have done pretty hard scraping in the Rockies and mining regions of New Mexico and Arizona, but a few days ago I had the worst scare in my life in the lumber districts of northern Michigan." The speaker was a young man of some 27 years, dressed in rough-and-ready style and wearing a frizzly tow beard. He shifted the position of his broad shoulders as he lounged back in an easy chair in the Sherman house office, puffing his cigar vigorously, and then continued: "It was one of those bitter cold days we've just been having, and I got up at three o'clock to rouse the men and get the sprinkler out. The air seemed full of blue steel and cut to the marrow like a razor. One of the teamsters got scared out and played off sick, so I had to take his place. When we had got a good load I took the reins and sat down on the butts of the logs, leaving the two loggers on behind. Of course, about twenty feet hung off the last bob. The road was a sheet of ice, for the sprinkler ran over it every morning, and the horses were sharp-shod, so we slid along smoothly till we got to the slide—a pretty steep incline ending in a turn which was mighty sharp for a road sixty feet wide. As soon as we started down my hair began to stand on end, for the horses galloped like fury to keep ahead of the bobs which were slewing all over the road. I got so paralyzed and nervous that when we approached the turn I reined in too suddenly. I felt the front bobs jump one way and the back bobs the other. The hind ends of the logs whistled through the air like willow switches, and I heard the loggers yell: "For God's sake, —— ——." The next thing was a loud snap! snap! snap!—like three tremendous paper-crackers—as the big log-chains broke like so many cotton threads. Did you ever use a switch-sling? Whirl it round and round your head, you know, till a sudden twist sends the apple off the end and spinning into the air? Well, that is the way I felt, and that is just what I thought of, as I was shot off into the air, over, and over, and over, till I stuck in a snowdrift some one hundred or more feet from the road. When I struggled back through the snow I found the horses trying to kick loose from the few bits of harness that dangled about them, the bobs tangled around the trunk of a small pine tree, and the logs scattered to the four winds. One logger crawled back to the road with a fractured leg, and the other soon followed with a dislocated shoulder. One had struck a tree and the second had landed against a stump. They afterward told me in camp that these things were not at all unusual, and, as I had some pretty heavy bruises myself, I concluded that I was not made to boss a lumber camp. So I was driven to town the next day to telegraph the management that the head teamster was filling my place, and that I was on my way to Chicago; and you bet your life I am glad I did it.—*Chicago Tribune.*

THE REBATE ON JUTE SACKS.

The *Chicago Tribune's* Washington special summarized an amendatory circular recently issued by the treasury department, which has the effect to render the process for securing the rebate on jute sacks so expensive that practically no benefit will remain from the rebate. All flour that is exported is shipped in jute sacks made from burlap manufactured in Scotland. The burlap is imported to the United States in the whole cloth, the required duty being paid by the importers. The cloth is afterward manufactured into bags, which are sold to millers and other manufacturers. A provision of the custom laws gives a rebate of the duty to shippers ezporting their goods in the jute bags. This rebate on the average flour bag amounts to a trifle over one cent. When it is known that the yearly shipment of flour from Minneapolis to foreign countries aggregated about 3,000,000 sacks it will be seen that the loss of this rebate is of much consequence to the millers of this city. A few months ago the payment of rebate was suspended, while investigations were being made into some alleged frauds, but on January 5, a circular was issued that seemed to settle the difficulty. It was discovered, however, that the regulations were loosely drawn and that there were still opportunities for steals. As a consequence the plan for securing the rebates has been made much more complicated and now costs almost as much as the amount of the rebate, as it provides that the flour must be emptied from the bags in order that the appraiser may examine them. Should this condition of things be maintained, it is likely to affect the shipment of flour to Europe. It frequently happens that foreign shipments are made on which the net profits are only 2 and 4 cents per sack. When the business is figured to such a fine point, the loss of one cent per sack has a decided influence. Although the millers obtain a much greater profit on the bulk of their exports, they neverthless would feel the loss of the jute rabate and will make endeavors to have the old order of things restored. The National Millers' Association has taken hold of the matter and will see what can be done.

THE CAUSE OF THE EGYPTIAN WAR.

The origin of the present Egyptian war dates from the reign of Ismail Pasha, a shrewd and unscrupulous intriguer, who accumulated a fortune from the exportation of cotton during our civil war. This money he lavished on Turkish officials till he found himself a favorite with the Sultan and endowed with almost regal power. He had been educated in Paris, and his ambition was to Europeanize Egypt and make Cairo the Paris of the East. To accomplish this purpose, he borrowed money by the millions at the most exorbitant rates of interest. This money was not devoted to national purposes, but was expended in display, in bribing favorite friends of the Sultan in Constantinople, in covering Egypt with palaces, and stocking harems. The fellahs, or native population, were heavily taxed to pay the interest on these debts, from which they derived no benefit, and which they had no share in contracting, and when the money could not be raised the Khedive's tax gatherers used to surround the villages, catch the inhabitants, and ply the bastinado till the taxes were paid.

At last things came to such a pass that Ismail could borrow no more money, and the fellahs could pay no more taxes. In the interest of the bondholders, mostly English and French, Ismail was deposed, and his son, the present ruler, made Khedive. To secure payment on the bonds, a joint control was established over Egyptian finances by England and France. Sir Rivers Wilson, the English representative, dismissed all the native Egyptian officials and flooded the country with a swarm of hungry English officials, who knew nothing about Egypt save that it owed them exorbitant salaries. A spirit of disaffection soon manifested itself, and a national party was formed, headed by Arabi Pasha, an officer of the army. A brawl occurred in the streets of Alexandria, and measures were taken by the English government to suppress the national party now in incipient rebellion. France refused to cooperate with England, and the latter resolved to act alone. Admiral Seymour bombarded Alexandria, and Wolseley, passing through the Suez canal, met the Egyptian army at Tel el Keber, defeated it, and captured Arabi Pasha, who was banished to Ceylon.

Meantime, the Arabs of the Soudan—an immense tract of the country, comprising Kordofan, Nubia, Senaar and Toka on the east, and some Nile districts further south—under the leadership of El Mahdi, the False Prophet, had risen in rebellion. England having undertaken to restore order in Egypt, now found herself compelled to suppress the Mahdi's rebellion. The Arabs, on the other hand, were instigated to resistance under the impulses of patriotism and religious fanaticism.

IRON VERSUS 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 A 1 all-iron vessels is 25 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 A 1 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.

NONSENSE.

SAVING GRACE IN MONTANA.—The other day a St. Paul minister answered a ring at his door bell and found there a brawny frontiersman, wearing a buckskin suit and a white Mexican sombrero. He was invited into the study, and after seating himself said:

"Pardner, I'm trying to case up a sky pilot to ladle out the savin' grace to the boys in Rawson's Gulch, Montanny. The barkeeper down to the Merchant's Hotel told me you slung about the heftiest jaw in the holy line in St. Paul, an' I thought I'd drop in an' size you up."

"If I understand you, sir, you desire to secure a pastor for your church out there."

"That's our little game exactly pard" an' the boys constitooted me an executive committee to come in 'yar an' run one down. We want the most heavenly mouthpiece in the country, an' we've got the dust to put up fur 'im."

"Who was your last pastor?" asked the minister.

"Never had one. You see, the boys out thar never stood in much on the religious racket, but we're agoin' to bank big on savin' grace in the future, an' play'er clear up to the limit. Glad tidin's o' great joy's the winnin' card at Rawson's from henceforth an' forevermore, pardner, an' don't you forget it."

"You say you never had a minister? What, then, has caused this sudden awakening—this new desire for light."

"I'll tell you, pard, its just like this. Thar's a big rivalry atween Rawson Gulch an' Rocky Bar, about five miles further up the creek. The two camps hev bin fightin' fur the lead fur a year, an we've allers downed 'em on every p'int. Las' week one o' the boys went up thar' an' cum back an' reported that the Rocky fellers had a preacher an' that salvation were a runnin' loose in the camp an' amazin' grace war growin' on the bushes. He said he heard the holy bloke preachify himself an' that he dished up the livin' word like a ten times winner. Wal, that sort o' paralyzed us, so to speak, an' we called a meetin' to see what war' to be done. At fust it war' perposed to go up thar of a Sunday an' clean out the congregation an' hang the preacher, but we wa'n't quite sure of the fighting abilities o' the meek and lowly worshippers up thar an' mout get licked, so it was finally decided to tree a Gospel sharp an that's what I'm yar fur now. The boys 'll treat you white, pardner, an' if you can do up the Rocky Bar capper in the heavenly game an' put it all over 'im a soundin' the glad tidin's, yer fortune's made. I like the cut o' yer jib, pard, an' I b'lieve, you'd shout salvation at us in a way that d make the Rocky Bar galoots pow'ful weary."

"What denomination is the majority out there?"

"None at all. You kin play yer cards ter suit yerself an' come at us jest as you think the hand orter be played. But say, pard, I reckon I wouldn't ever give the boys a Baptist lay out to play up to."

"Why not?"

"Wal, yer see, we aint much stuck on water out thar only from a business pint o' view. Water's all good enough an' mighty valuable fur washin' out dust, but aside from that 'taint much account. Still, if that's yer lay, pardner, come right along. We'll take turns an' keep you baptizin' half the time, jest to down them Rocky fellers. Thar's a gang o' twenty Chinamen workin' a placer claim below us, an' we kin run them up an' let you souse the hull mob two or three times a week, if it 'll make the Rocky crowd think the good work's a movin' right along."

The minister was forced to decline the call, and the old man said as he rose to go:

"All right, pardner; no harm done. I'll keep up the hunt till I tree my man. We'll down Rocky Bar on salvation if it's in the pins. Good day, sir, an' if you ever come our way stop off an' we 'll treat you squar." Good bye.—"*St. Paul Paper.*

"Good evening, Tommy. Is your sister Clarissa at home?" "Yes, sir, she's in the kitchen popping corn for you." "Popping corn for me? Why, how very thoughtful! I like pop corn very much." "Yes, sir; she said she was going to put a pan of pop corn under your nose, and if you didn't take the hint she'd give you the shake."

A 12-year-old boy entered a news-stand, threw down 15 cents, and said: "Gimme 'The One-eyed Demon of the Ditches,' 'Crimson-Handed Bill, or the King of the Highwaymen, and Sal. Slumpkins, the Queen of the Shoplifters of the Half-Dime Series." And yet an English review once sneeringly said: "Who reads an American book?"

DAUGHTER—Say, ma, how much of a fortune have you got? Mamma—My child, that isn't a subject for little people like you to concern yourself about. Daughter—Oh, yes, ma, it is. There's a girl in my class that's only seven, and she was telling me that she would be worth $50,000 when her pa and ma kicked the bucket

SOME weeks ago, when corn was at its lowest notch, a farmer brought a load to town and inquired its price. "Fifteen cents," was the reply. The farmer paused and gazed on the ground thoughtfully. At last he said: —"I wonder if there ain't any place in town where I could trade that load of corn for a load of cobs. I'm about out of wood."

THE OLD MAN. An Eastern paper tells the following story of a Western merchant who wanted to do some sightseeing and buy his fall stock at the same time. He entered a dry-goods house on Broadway, and accosted the first person he met with "Are you the proprietor?" "Not exactly the proprietor," was the reply. "At present I'm cutting my cards for an interest next year by organizing noon prayer-meetings in the basement, but am now only shipping clerk." The stranger passed on to a very important personage with a diamond pin, and asked, "Are you the head of the house?"—"Well, no, I can't say that I am at present, but I have hopes of being soon. I am only one of the travelers now, but I'm going for a $500 pew in an uptown church, and that will mean a quarter interest here in less than six months." The next man had his feet up, his hat back, and a twenty-cent cigar in his mouth, and he looked so solid that the stranger said, "You must run the establishment?"—"Me? Well, I may run it very soon. At present I am the book-keeper, but I intend to get into the church choir with the old man's darling, and soon I'll be an equal partner here."

The stranger was determined not to make another mistake; he walked around until he found a man with his coat off and busy marking goods, and he said to him, "The porters are kept pretty busy here, I see,"—"Yes," was the brief reply.—"I suppose you are preparing to invest in a gospel hymn-book and sing the old man out of an eighth interest, aren't you?" "Well, no, not exactly," was the quiet reply. "I am the old man."—"Durn my buttons," said the stranger, and then he skipped.

ITEMS OF INTEREST.

THE LARGEST RAILROAD STATION IN THE WORLD.—The largest railroad station in the world is that belonging to the North-western Railroad Company, at Birmingham, England, completed and fully opened for passenger traffic on the 9th ult. One thousand men have been employed in its construction for 2½ years. It has cost in construction $5,000,000 and covers 12 acres of ground. There are tunnels at either end and through them 400 trains pass each day. The length of the platforms exceed a mile and a half. There are five signals-boxe for working the traffic, each of which contains 144 point and signal levers and is operated by seven men; six locomotives do the switching in the station. The whole is roofed in with arched-glass roofing upon the Paxton principle.

THE "LOCOPHONE."—The latest mec hanic al contrivance for dispatch and safety in the running of railway trains is the "locophone," which has been constructed by Frank B. Taylor and is now being tested on the New York & New Haven Road. The apparatus resembles the telephone, and is designed to place each engineer on the road, while the trains are moving at the highest speed, in instantaneous speaking communication with the superintendent or train dispatchers. By its means all the engineers on the road receive the message at the same moment. The circuit is completed through the rails.

BORAX AS AN INTERNAL DISINFECTANT.—M. E. de Cyon, following Dumas, maintains that borax, unlike other antiseptics, is perfectly harmless, even in doses of as much as 15 grammes in the course of a day. Besides the importance of this fact in regard to public alimentation, the author considers it has a great medical interest. He believes borax taken internally in times of epidemics would prove of great hygienic value. In 1879 when the plague broke out in Russia he went to St. Petersburg and pursuaded the Imperial Medical Council to recommend the use of this substance in the affected districts. This recommendation was made in a meeting of the Council on February 19, 1879, under the presidency of Dr. Pelican. The end of the epidemic, however, prevented the proof of the value of borax on that occasion. Since then M. de Cyon asserts that he has had frequent opportunities of testing the medicinal virtue of borax. He urges its employment in the districts invaded by cholera, and asserts that the workmen in borax factories have always been remarkably preserved from attacks, even when they have been in the midst of the disease. Thus in Italy, during the violent epidemic of 1864-65, none of the workmen in the seven factories at Lardarello were attacked, although in a village only 3 kilometres distant a third of the whole population was swept away. M. de Cyon, recommends it to be taken in quantities of 5 to 6 grammes per day, and believes that it destroys the microbes not only in the intestinal canal, but also in the blood.—*Chemist and Druggist.*

THE *Miller's Review* of Philadelphia says:—The latest phase of milling journalism is rather a quaint one. The solicitor of advertisements travels in company with a man who wants to fit up his mill with every device known to the trade, both ancient and modern. When calling upon Smith, who makes a purifier, the handy friend speaks up and claims that a friend of his is using that very identical purifier and considers it the best in the world. The handy friend is looking around for an outfit, and after much pursuasion was induced by the representative of the "Millers' Boomerang" to call and inspect the purifier in question. He is not quite ready to purchase, but in a few weeks will write to Smith and probably make a purchase. The next stopping-place brings this happy couple to the maker of a roller mill. The same nice little formula is gone through with. The next landing-place sets them down before the maker of a grain-cleaning machine, etc., etc. Smith and Jones and Williams are all highly edified at the courtesy of the representative of the "Boomerang." But they never receive any orders from the call. The kind-hearted publisher's representative is put down as one to whom favors in the advertising line should be shown, and he returns to headquarters with a wink in one eye and much prospective profit in the other.

BREAD FACTORIES IN GERMANY.—During the past year several bread factories have been erected in different German capitals; but at present it is, perhaps, too early to say with what success. The enterprise has naturally excited an opposition from the bakers. Where the factories are conducted by millers, they have tried to secure the closing of their establishments by the public authorities, on the ground that the use of a mill as a bakery constituted an infringement of the bakers' patent. Failing to secure the assistance of the law, the Vienna bakers have collectively resolved to "boycott" any miller who makes and sells bread. The same action has been taken by the bakers of Berlin, who have also to face the competition of baker-millers. A large bread factory was recently established by a miller at Frankfort-on-the-Main, and it is said that the bakers of the locality are about to adopt the same measures of reprisal against this gentleman's mill and bakery which have been put into force at Berlin and Vienna.—*The Miller*, (London.)

AN AUGER TO BORE A SQUARE HOLE.—A Cleveland paper says that the first and only auger ever manufactured that will bore a square hole is now in the shops of the Cleveland Machine Company. This auger bores a two inch square hole, the size used in ordinary frame buildings and barns, but they can be made on the same principle to bore square holes of any size. Its application is ordinary and works on the same principle as round hole augers. Its end, instead of having a screw or a bit, has a cam motion which oscillates a cutter mounted on a steel rocking knife which cuts on both sides. In order to prevent the splitting of the wood the ends of the cutter are provided with small semi-circular saws which help in cutting out perfectly square corners. It is estimated that this new process will save the labor of three men who work with chisels, as one man can conveniently cut a two-inch mortice in the same length of time he can bore a round hole. The invention is the work of a Wooter man who has given the subject years of patient thought.

IN MEMORY OF COLONEL OTWAY WATSON.

From Columbus, O., *Times*,) Feb. 19.

Colonel Otway Watson, brother of D. K. and James Watson, of this city, died at his home on Lexington avenue Thursday noon after an illness of five months. Deceased was aged forty-four years. He leaves a wife and two small daughters. Mr. Watson served in the war of the rebellion as Second Lieutenant of the One Hundred and Thirteenth O. V. I., and made a splendid military record. As a citizen of Columbus since 1874, (London, Ohio, is his native place,) he was identified with some of our industrial interests, being prominently connected with the Revolving Scraper Company and President of the Case Manufacturing Company. The funeral was held yesterday afternoon.

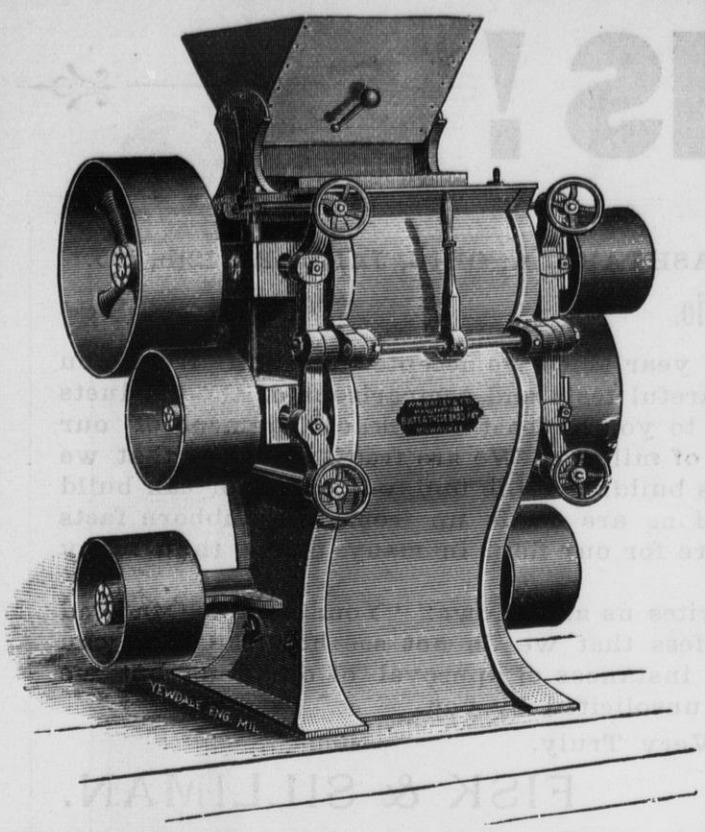
The following very feeling tribute to his memory is from one of his army comrades:

Otway died in this city on the 19th day of February, 1885, aged forty-four years. This simple announcement carries with it sorrow to many hearts beside those of his own immediate family. It was the privilege of the writer to have served throughout the late war with him and the impression he first made was only strenghtened and deepened by years of intimate association. Frank, open, manly, generous and brave, he won all hearts. He entered the military service as Second Lieutenant of Co. A. 113th Ohio regiment, was with the command in all its arduous services until the end of the war, being gradually promoted until he came home as the Lieutenant Colonel of his regiment. Tennyson's "In Memoriam" might well have been written for Colonel Watson. The evil influence of military life had no ill effect on him. His character at the end of his service was as pure and bright as the day it began. And so it had ever been with him in civil life. The changes of fortune he bore with the strength of a true man, and he filled every position he was called to occupy with the same ability, integrity and character. His friends will ever cherish his memory, fragrant with all that is purest, brightest and best.

COMRADE.

GUIDE TO GOGEBIC.—"Gogebic and Other Resorts in Northern Michigan and Wisconsin," is the title of a 40-page guide book to resorts on the line of the Milwaukee, Lake Shore and Western Railway, now ready for distribution. The General Passenger Agent has received advance requests for the book to the number of several hundred, and there is little doubt but that the edition of 30,000 will find a ready distribution. The book contains something like two dozen fine engravings, maps of the famous fishing and camping regions of the North, and an abundance of descriptive matter regarding the various resorts and more attractive points reached by the Milwaukee, Lake Shore & Western Road. In itself the publication is a very interesting and instructive one, but to persons desirous of visiting the North during the coming summer season, it is doubly desirable for information and reliable descriptions of the various points for fishing, hunting and camping.

Copy of book will be mailed free to any address on application to H. F. Whitcomb. General Passenger Agent, Milwaukee, Wis.



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The only Roller Mill having Two-Reductions in one Machine, the material being operated on twice without the use of elevators. This Mill is especially designed to meet the wants of all parties for grinding

CORN, OATS, BARLEY OR RYE FOR FEED.

For this purpose it cannot be excelled. It will grind grain WET or DRY equally well, and perfectly cool and flourless. It is far better than burr stones or chilled iron discs. It takes but one-third of the power which is required to run a medium sized burr, grinding twice as much in a given time; does better work, and avoids the trouble of dressing stones. The Rolls in the Bolte Mill are placed one set directly above the other, the upper set being corrugated somewhat coarser than the bottom set and in such a manner that even grain after being soaked with water, will readily be drawn into it and broken and forced through a straight sided hopper to the bottom set of rolls, which are corrugated much finer. The Mill is provided with a Shaker for feeding the Rolls instead of feed-rolls, such as are commonly used on other Roller Mills. This is a great advantage, as it does not become clogged with bits of corn cobs. straw, or many other substances, that are generally intermixed with grain that is ground for feed or distilling purposes.

The Mill is also provided with an automatic locking device, that is operated by simply moving a hand lever, conveniently arranged in front; in case the Mill becomes clogged or runs empty, it instantly throws all the Rolls apart and prevents the belts from coming off. The Rolls are all arranged so they can be set while the machine is in motion, by an ingenious device that acts in the form of a key between the bearings of the Rolls, and regulates the fineness of the grain independently of the hand-wheels, which are only calculated to regulate the tension of the springs. The keys are all so arranged that the Rolls are kept from rubbing each other when not grinding, as we make no calculations on the stock keeping them apart. the Rolls used are superior to the ordinary Cast Iron Chilled Roll, and are better adapted for grinding feed; on account of their extreme hardness and being less brittle, they will stand the resistance of nails and other hard substances much better, the outside of the Roll being a steel shell, tempered, and of large diameter, so it presents about one-third more grinding surface than the ordinary Rolls used in flour mills. The Roll itself is of a light pattern, and something like the shape of a pulley, upon which the above named steel shell is shrunk and tempered at one operation, thereby getting the Rolls absolutely round and true. The weight, although the Rolls are much larger than the ordinary Rolls, is about one-half, which requires less power to drive them and less additional wear on the bearings. The machine is driven exclusively by belt, either from above or below, which makes it perfectly noiseless, the driving belts bearing on both sides of the machine with no counter shaft or short bolts. The frame is bolted together and has all the boxes cast solid to it, so there is no possibility of bearings getting out of line or becoming dis-arranged without breaking the frame. We make all sizes of Rolls corrugated to any number of corrugations per inch, and are also prepared to furnish first and second break on wheat. We respectfully invite all parties to inspect our Mills, and warrant them superior to any mills made. Address, for further particulars, prices, etc., the SOLE MANUFACTURERS,

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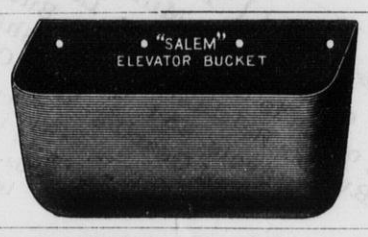

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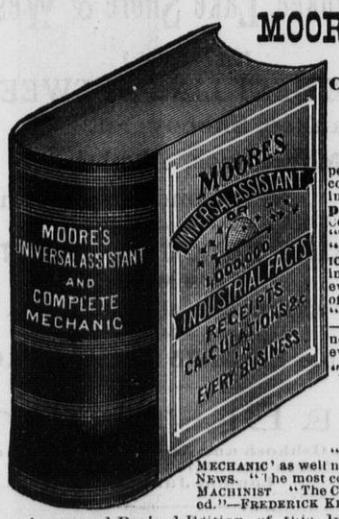

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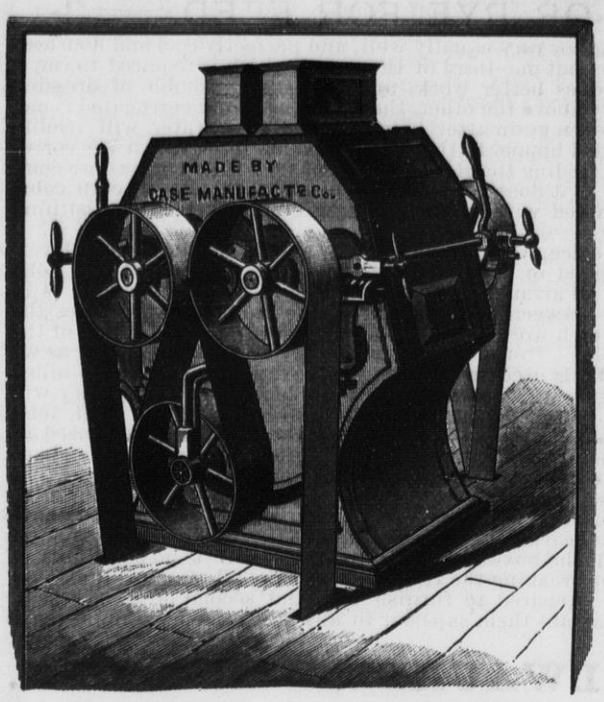

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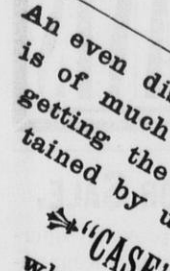

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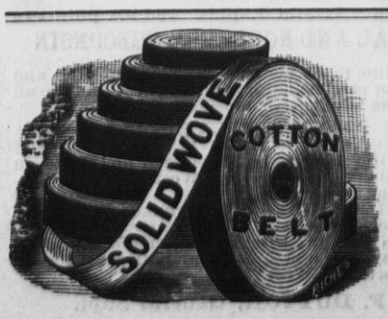

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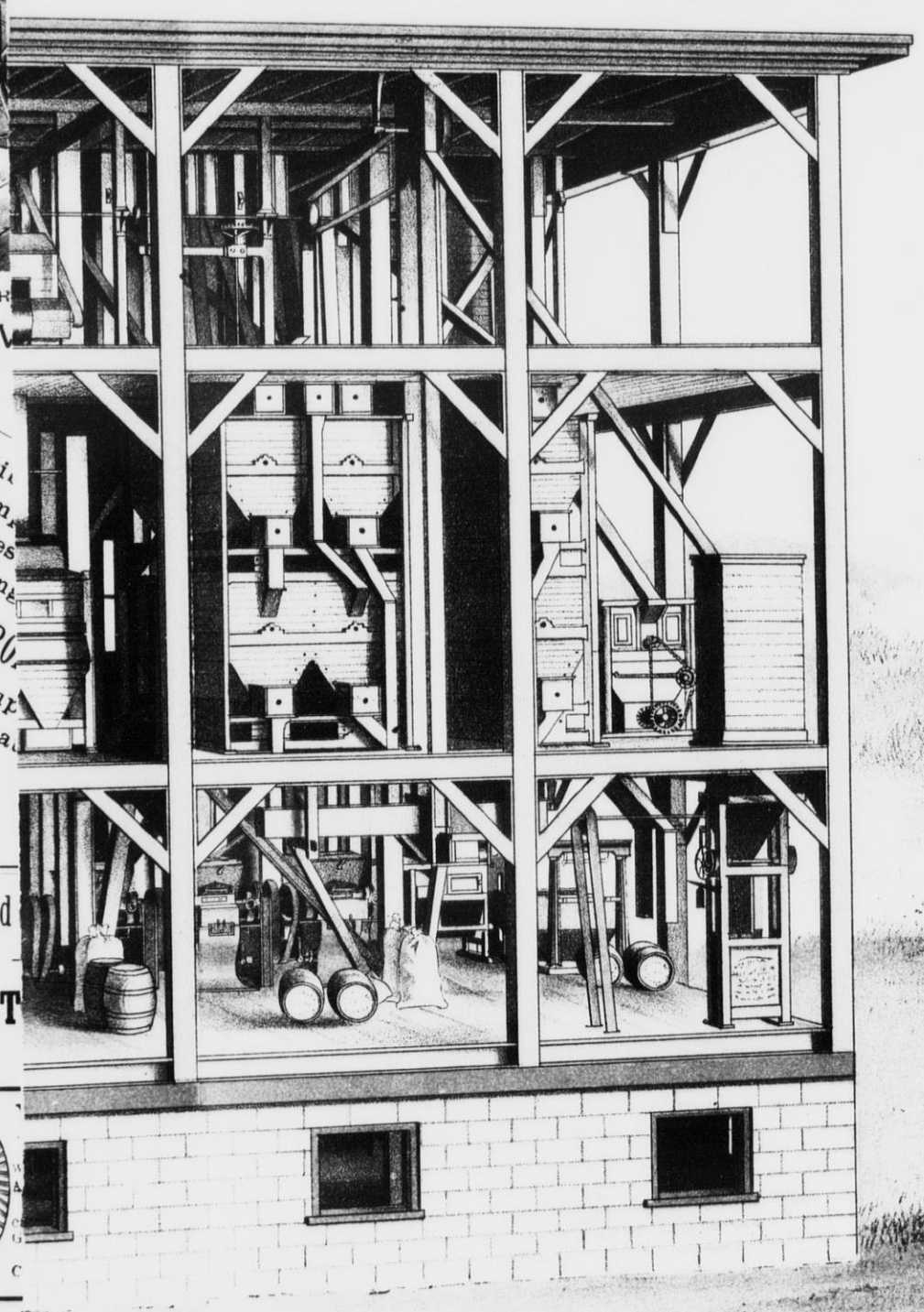

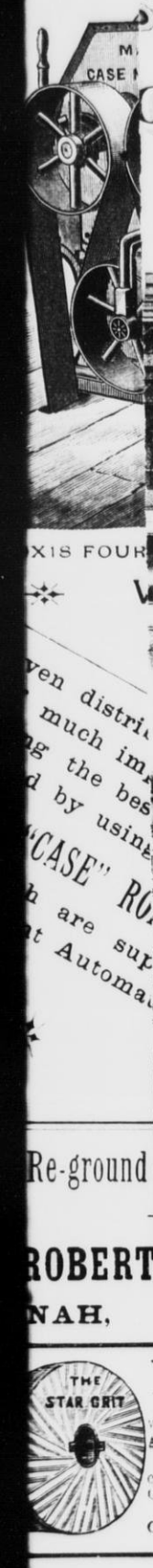

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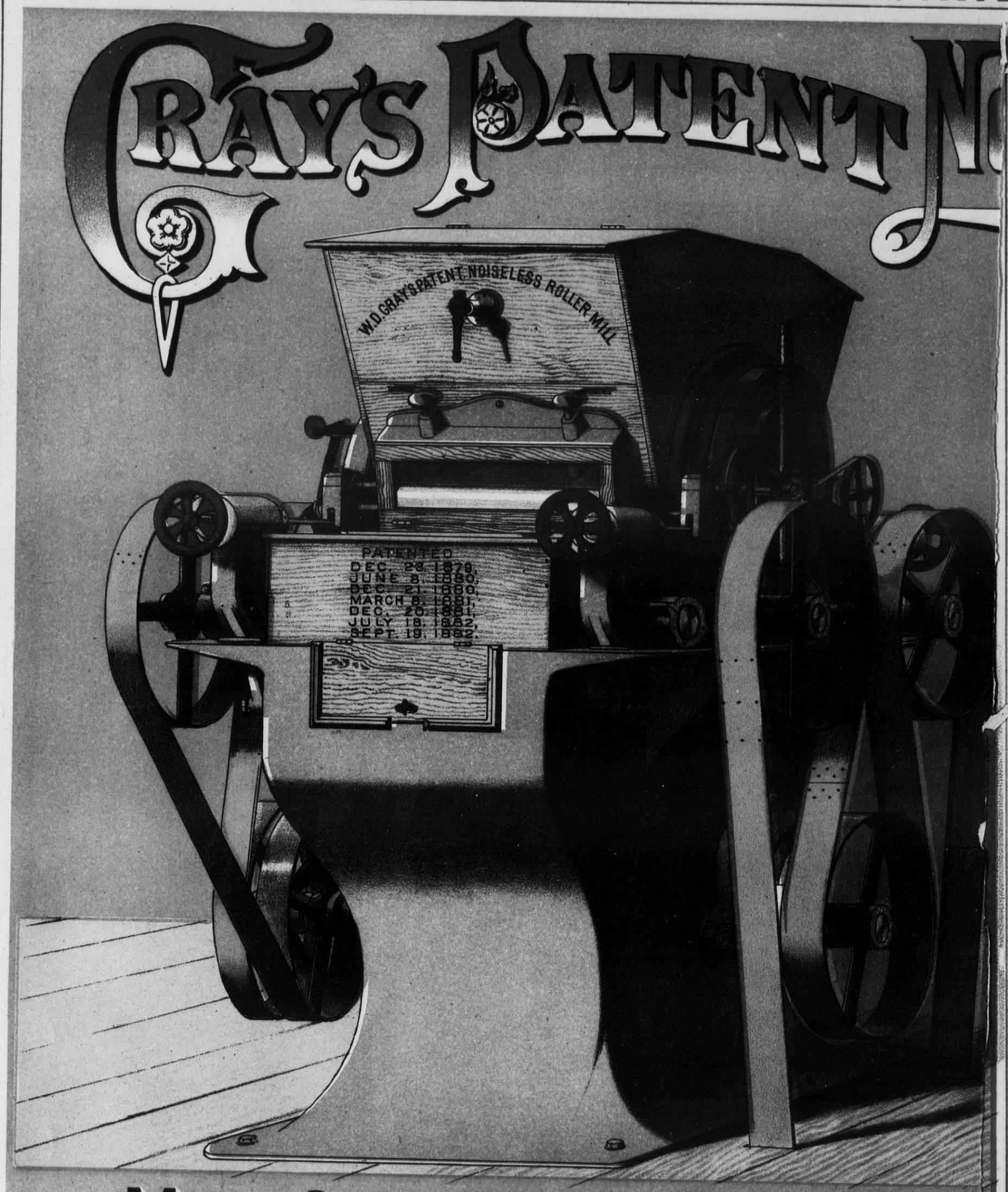

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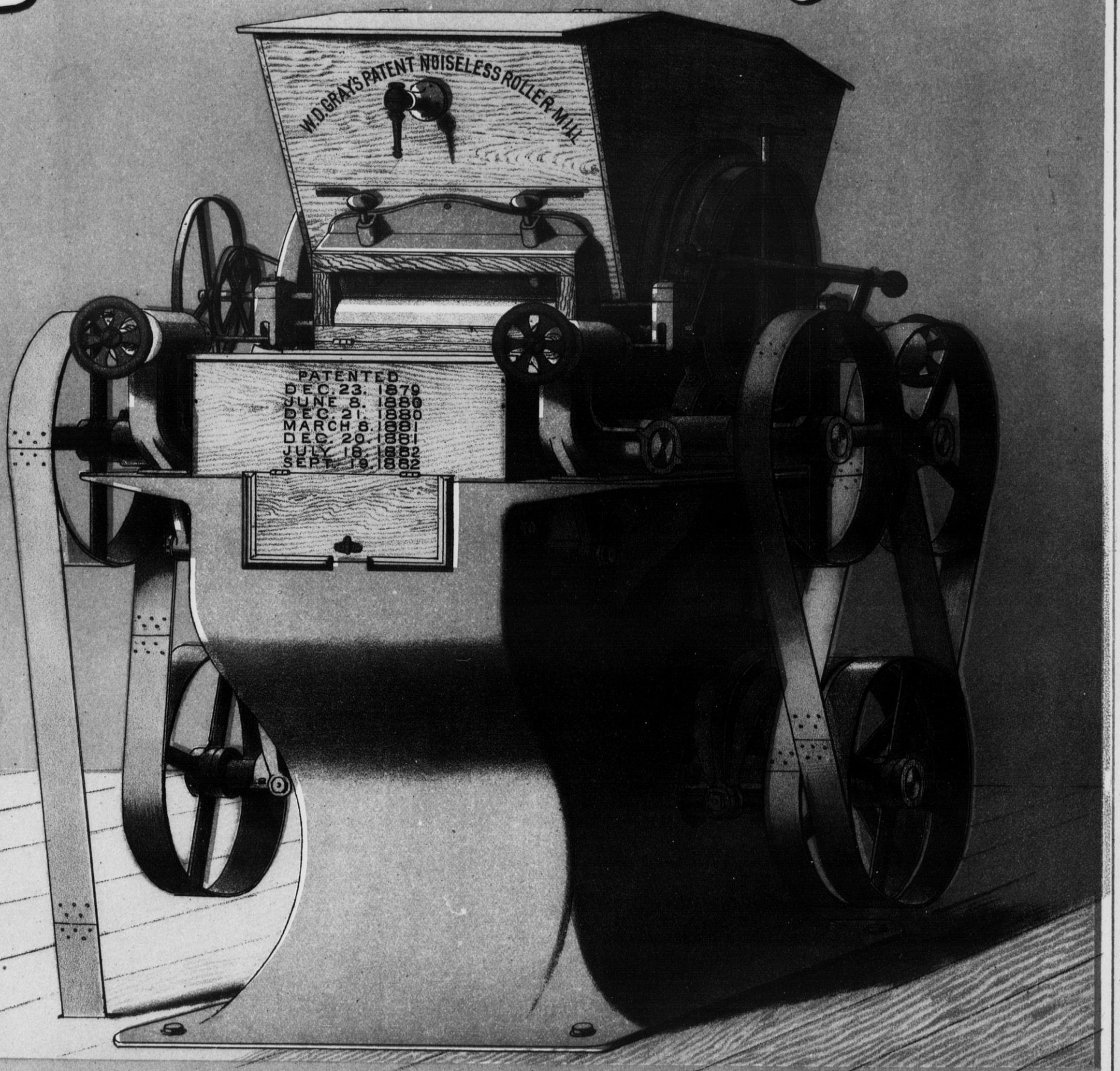

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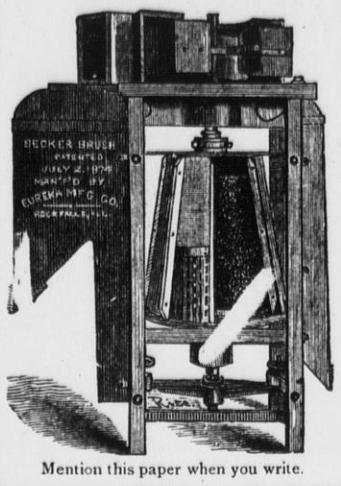

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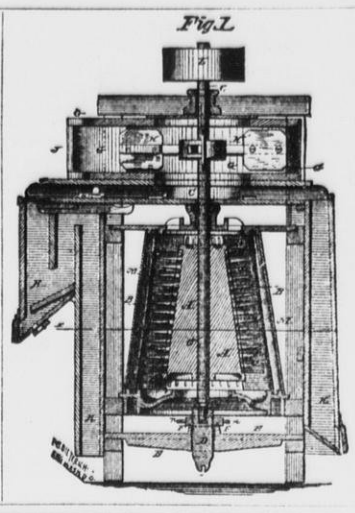

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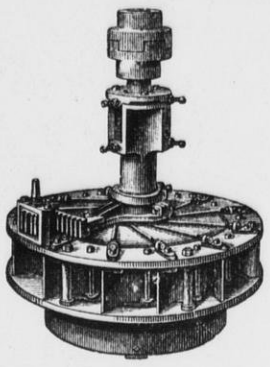

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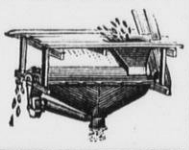

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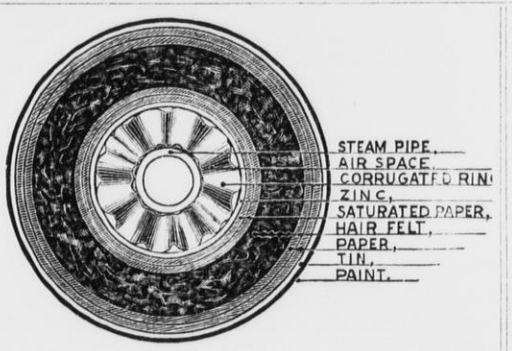

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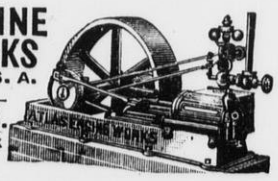

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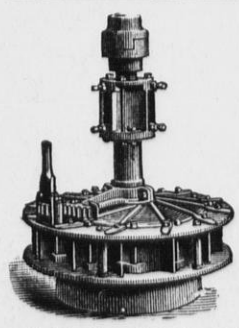

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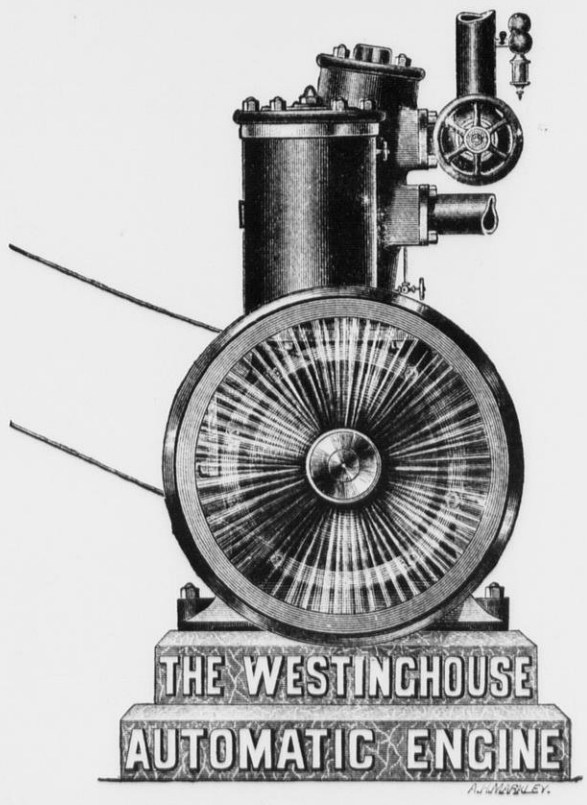

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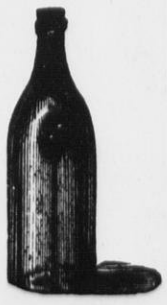

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THE BUCKET SHOPS.

The fight between the Board of Trade and the bucket-shops, which has been in progress for a year or two, still continues with unabated fury, numerous suits being still pending in the courts to settle the differences between them. In this fight the board of trade is the aggressor, and the war is waged with the avowed object of utterly depriving the bucket-shops of existence. The plan proposed to accomplish this is to withhold from the bucket-shops the market quotations of the board, without which, it is said, they could not live a day. The reason given for making this fight is that the bucket-shops are a nuisance to the community. It is alleged that, while these concerns represent themselves to be marts of trade, they are in reality merely gambling halls, where the idle, the lazy and the avaricious may indulge their favorite vice without having attached to them the stigma of law-breakers or being branded as criminals. While it is admitted that the implements of the game which is played in these places are similar to those wielded by legitimate commerce, it is asserted that the fact only renders them the more alluring and deceptive, and therefore the more pestiferous and dangerous. It is claimed that in these places many a fortune has been lost and many a character wrecked; that in them many a young man has met his first temptation to rob his employer's till, to lose his self-respect, and have first occasion to behold himself a thief and a criminal.

The ordinary bucket-shop is a place where men can deal in grain and provisions in less quantities than are dealt in on the regular board of trade. The commission is usually one-eighth of one per cent. for grain, instead of one-quarter of one per cent., which is the charge on the regular board. The quotations are derived from the regular board by telegraph wire, and are posted on a blackboard in public view. When anyone wishes to make a purchase he consults this board as to the latest price of the article in which he wishes to deal, and then fills out a contract form provided by the proprietor of the shop, and which in effect certifies that he has purchased a given quantity of the article in question at the price named, and to this he attaches his signature. This contract he hands to the cashier of the shop, together with the regular margin, which is one cent per bushel on grain and twenty-five cents a barrel on pork. The purchase is then consummated and holds good until the market declines enough to exhaust the margin put up, in which case a call is made on the purchaser for more margins, and, in case he declines or neglects to meet this demand forthwith, the deal is at once closed and the purchaser is a loser by the amount he has put up in the first instance as a margin. If, however, the market advances or stands stationary and the purchaser desires to have the transaction closed, he fills out another contract form in the same manner as when making his purchase. which certifies that he thereby sells the article mentioned at the price named to close out a deal. Should the market have risen, he is then entitled to receive from the proprietor of the shop where he has made his deal the difference between the price at which he purchased and the quotation at which he sold it, less the commission already mentioned, which the proprietor charges for making the deal. Should the market have remained stationary from the time the purchase is made till the deal is closed, the commission is deducted from the margin put up, and the balance remaining turned over to the purchaser; or should it have declined a little, but not enough to exhaust the margin, the commission and amount of the decline are deducted, and the balance turned over. In the bucket-shops purchases and sales are not made with a view to make and take delivery of the articles bought and sold. They are simply a bet that the markets will advance or fall as the case may be, and in this view of the case the business transacted there is betting pure and simple. It is. nevertheless, claimed by the proprietors of these places that their business is in principle identical with that of the regular board of trade. This is true to a certain extent. The purely speculative trades on the board of trade—and it cannot be denied that there are a very large number of these trades effected daily—are in nature and principle identical with those of the bucket-shops. But, on the other hand, it must be remembered that a large amount of the business transacted on the floor of the regular board is legitimate, bona fide trading, engaged in with no other intention than that of making and taking delivery of the commodity dealt in. The members of the board of trade have always within their reach facilities for this legitimate exchange of the articles of commerce dealt in. The bucket-shops have not, and do not pretend to have any such facilities.

Another difference in the business of the two places, though it hardly reaches to the principle of the thing, is that every operator in a bucket shop must deal directly with the proprietor of the concern. All purchases are made from him, and all sales are made to him. The frequenters do not deal with one another as on the regular board. To the casual observer the ordinary bucket-shop presents a very tame appearance as compared with that of the regular or open boards of trade. It is simply a large room fiilled with chairs, which are occupied by the frequenters, who sit quietly there watching the figures which are continually being posted on the large blackboard in front of them, and which represent the quotations of the regular board. A dead stillness usually prevails. There is no loud talking, no shouting, no frantic gesticulation, as on the regular board; and when anyone wishes to make a purchase, he simply rises, goes to the cashier's window, fills out his blank contract, and hands it to the cashier, with the margin, as already described.

In the bucket-shops, the lowest deal taken is for five hundred bushels of grain and twenty barrels of pork. The proprietors of these shops exercise their own discretion about taking a deal or closing it out. That is, some of them will not close a deal promptly, when asked to do so, unless they feel so disposed, but will make the purchaser wait for further quotations. In one bucket-shop on the board of trade alley, there is a curious instrument known as a clock ticker. It is a large square frame, surmounted by what looks like an ordinary clock. In the frame beneath the clock there are two slits, one beneath the other. At the expiration of every fifteen seconds, by a movement of hidden machinery, some cards appear to view on one or the other of these slits, and on these cards are written the names of a commodity such as wheat, corn, pork or lard, and underneath the word there is a fraction —⅛, ¼, or ½, etc. Should the card appear in the upper slit, it raises the market by the fraction shown. If it appears on the lower slit, it causes it to fall to the extent indicated by the fraction. These cards behind the frame are of course arranged by the proprietors of the shop, and it is supposed that the machine is so constructed that these proprietors can make the cards go into the slit as they desire. It is true the cards are put into long boxes and exposed to public view before they are put into the machine, and in order to give an appearance of fairness to the whole business, someone among the customers is invited up to shuffle the cards, but of course the one who accepts the invitation can only disarrange a certain quantity of the whole lot; and enough of the original pack will remain to make the lot come out on the side of the proprietors, so that, in the long run, the game is invariably a losing one for those who patronize the institution. This clock fixes the prices of articles dealt in according to its own methods. Sometimes these prices agree with the real prices, and sometimes they do not. At every movement of the cards there is a raise in some commodity, and a fall in another. Quite a large crowd of people gather in this shop from day to day and experiment with this machine, and keep it up until they lose enough money to satisfy their curiosity. No one was ever known to come out a winner in the long run. Of course the principle of the business is nothing more nor less than pure gambling, and should be so considered by the authorities. These bucket-shops possess a great fascination for a class of young men who happen to have a little money and dislike to work, and they congregate in there in large numbers from day to day. and smoke and make deals as they may take a fancy. Of course it is only a question of time when their money gives out and they are obliged to go to work again. Hundreds and hundreds of cases have been known in this clty, where men have followed this fascination until they have lost everything they had, and seem utterly unable to break away from the power which this form of gambling exercises over them. Many thousands of cases might be quoted as illustrations of the truth of the above, but one or two examples will suffice. Sometime ago a well-to-do grocer on the West Side became infatuated with the idea that by speculating he could earn money easier than he could in his store. Accordingly he went into a bucket-shop and began to operate. When he started he had several thousand dollars, and his wife had as much more. Of course he neglected his legitimate business more and more from day to day, and became more and more absorbed in his speculation. Sometimes he won and sometimes he lost, and the latter was the more frequent occurrence, and in the course of a year or two his store had gone, his money had gone, and his wife's money had followed both. The family was nearly broken up, and to-day that man may be seen still hovering around these places, a mere wreck of his former self.

Another case was that of a young man on the West Side who was keeping a little bakery and confectionery shop. He had saved up money in former years, and thought he could get a living easier than by minding his store, and so he went to the bucket-shop and commenced to operate. At first he was much pleased with the new occupation, and was fortunate in several deals. By and by his luck turned, and the deals began to go against him; as usual in such cases, he lost his mental balance, and became involved in deals to such an extent that he could not see his way out. In the course of a few days, however, a drop in the market closed his deals for him with a heavy loss. When reflecting upon his course a few days subsequently, he made this remark: "It seems a very easy thing for a man to go into these shops and make $5 and $10 a day in one deal and then come out, but the experience of the world is that very few are able to do it. My own experience is that I am one of the majority." Thereupon he turned his back upon the whole business, a sadder and wiser, if not richer man.

Still another case was that of a young man who came from the interior part of the State, as soon as he came into the possession of a small patrimony, to push his fortune in this great city. He was a telegraph operator by occupation, and on arriving here obtained a situation as operator in one of these bucket shops. Very soon he caught the infection of the fever of speculation with which the atmosphere around him was laden, and he began to make ventures in the whirlpool of speculation, and in an equally short time all he had in the world disappeared in the vortex. He was observing, however, and plucky as he was observing. His experience had taught him that, while the lambs that frequented the bucket shops invariably got shorn of the last fiber of wool on their backs, the shepherds who owned the fold just as surely lined their huts with the wool, and accordingly he determined to start out afresh as one of these. To enable him to do so he borrowed a little money and then opened his shop. Good luck attended him from the start, and in three months' time he was worth $25,000 in hard cash. He then resolved to stop and give up the whole business and succeeded in selling out his shop to advantage. The habit he had acquired, however, was too strong for him, and strive as he might, he could not withstand its fascination, and to-day he is still to be found in the pit dealing in margins and puts and calls, and such like vapory articles of commerce. His end is not yet; but reasoning by analogy, it does not take either a prophet or the son of a prophet to predict what the inevitable end will be.

It is true there are some persons who are fortunate in their ventures, and who come out ahead in the game. Some of them know enough to keep the money after they have won it, and go about their business, but these cases are very rare. The almost invariable experience of the speculator is that if he has made some money by dealing he becomes more anxious to make a second deal, and if he should happen to win twice or three times in succession, he is almost sure to become entangled in a very short time, and lose all that he has gained. A person may commence dealing, and be almost invariably successful for quite a length of time, and then, all of a sudden his luck will turn, and he will commence to lose, and after losing several deals he grows desperate and begins, as in betting, to make his stakes larger, as any gambler would under the circumstances, and the subsequent loss is great in proportion. It has already been said that the board of trade has made a determined effort to deprive these bucket-shops of their quotations, but in spite of every precaution they have thus far succeeded in securing them. The prospect, however is that in the course of time the board of trade will succeed in depriving them altogether of these quotations, and thus break up an unmitigated evil for the whole community. — *Chicago Journal.*

THE NEW "REFORM" PURIFIER.

In the last number of *Die Muehle*, published at Leipzig, Mr. Kunis gives a brief description of this new purifier, which is an improvement on the purifier patented some years ago by Seck, of Dresden. Mr. Kunis saw one of the new machines at work, and thus describes it: There is a piece of flannel which runs on four rollers over the top of the sieve, which is covered with silk as fine as No. 11. The silk is kept clean by a brush. The air is exhausted through the flannel first and then through the silk. This current of air sends the light particles up, but before they reach the flannel above the sieve, they pass through little channels which make the air travel faster. As soon as the dust has passed the little channels, the heavier particles of this fluffy stuff settle down into the channels which are fixed on the top of sieve frame. Through shaking, they run down the channels (which slope a little) and collect in a worm. The very lightest particles go right up and stick to the flannel. The flannel, which, as I said before, runs over four rollers, gets cleaned on one side through the shaking arrangement, and the very light stuff is collected by itself. There is no stive room required for working this machine, and as the draught has to pass through the flannel before it gets to the silk, it spreads evenly all over the surface of the sieve. The principal advantage of this machine is that nothing is lost. Even the offals, which generally settle in a dust room in a heap, are divided in inferior and better classes, and the air which passes away from the machine is perfectly clear and free from dust. The machine cleans about eight hundred weight of middlings per hour.

A NEW PORCELAIN.—A new porcelain, far superior to the famous old Sevres, and identical with that of China, lending itself to artistic decoration and taking all kinds of glazes, has been produced after ten years' experiment, by M. Lauth, of Sevres.

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MILWAUKEE, APRIL, 1885.

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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., April 1, 1885.

To Those Interested in the Flouring Trade:

THE UNITED STATES MILLER is now in its ninth 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.*

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"SITUATION WANTED" ads. 50 cents each insertion, *cash with order.*

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.

MILWAUKEE AMUSEMENTS.

GRAND OPERA HOUSE.—Performances every evening, and Wednesday, Saturday and Sunday matinees.

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SLENSBY'S VARIETY THEATER—Performances every evening, and Thursday and Sunday matinees.

DIME MUSEUM.—Performances every hour from 1 P. M. to 10 P. M., every day. Freaks, curiosities and excellent stage performances.

THE *Milling World*, Buffalo, N. Y., has reduced the size of its pages to what they used to be a long time ago, and proposes to make times lively for advertisers.

C. A. WENBORNE, Esq., of the *Milling World*, Buffalo, N. Y., was confined to his bed, in the Plankinton House, Milwaukee, by sickness, for five weeks. He has recovered sufficiently to get home again.

THE Red River Valley Millers' Association was recently organized at Moorhead, Minn. G. N. Kneesly, of Moorhead, is the Secretary. The principal object of the Association is to take special steps to introduce flour made from wheat in the Red River valley, in the East and into Europe.

MR. PALMER, of the *Northwestern Miller*, will soon issue a book entitled "Gradual Reduction Milling," by L. H. Gibson. The author is a practical man, and a good writer. The book ought to be a good one.

THE BRITISH GOVERNMENT gave an order March 20, to P. D, Armour & Co., of Chicago, for 5,000,000 cans of meats, for the army in Egypt. It will require over 70,000 head of cattle to fill this order.

ONE HUNDRED AND NINETY-TWO MILLIONS bushels of corn are required annually by the glucose manufacturers of the United States. The cost of a pound of glucose to the maker averages about two cents.

GERMANY has placed an import tariff on wheat of about 20 cents per bushel. Formerly it was 7 cents. The direct exports of wheat from this country to Germany for the past seven years have averaged 1,146,750 bushels per year.

ANNOUNCEMENT.

With the May number, the UNITED STATES MILLER commences the TENTH year of its existence. We have concluded to make some change in its form. The paper will be considerably enlarged, but the size of the page will be reduced. We think that our readers will be generally pleased with the change. It shall be our aim to publish as handsome a trade journal as any one can, and we shall try to keep the contents of these pages full of the most desirable matter, and to merit the patronage of the trade every where. We take this occasion to thank our many friends for their favors, whether great or or small, and trust we have given them good satisfaction in the past.

THE Minnesota legislature has passed a railroad and elevator bill similar to that now in operation in Illinois. A commission is to be appointed by the governor to carry out the provisions of the bill. If impartially carried out it is thought that all parties concerned—the farmers, elevator owners and railroads—will be reasonably well satisfied.

INVENTORS of new flour mill machinery, already in the market, have not been idle during the past few months, either at home or abroad. Numerous milling patents have been granted, and a host of applications filed. Many of these inventions will, doubtless, prove to have considerable merit.

BUSINESS is reported to be very lively with the mill-building establishments in Great Britain. Many new roller mills are being built, and many more are being remodelled to a greater or less extent. The British miller will leave nothing undone to secure plenty of good wheat and to mill it economically. This course is, no doubt, the best one they can take to diminish the present enormous import of American flour.

ONE reason why some millers find milling to be unprofitable, is because the mills are not well balanced—they have too much of some kinds of machinery and not enough of some other. The result is an unsatisfactory product, which brings, of course, an unsatisfactory price. Owners of such mills cannot take steps too soon to rectify such mistakes.

MR. B. F. ISENBERG, of Huntingdon, Pa., the President of the Pennsylvania Millers' Association, has two sections of land in Kidder County, Dakota, on which he has been raising wheat. He has made a careful estimate, and reports that the cost of raising a bushel of wheat and delivering it at the railroad station on the N. P. R. R. was 34¼ cents. This includes interest on investment, wear and tear on horses and machinery and taxes, as well as all other expenses necessary for raising and harvesting the crop. From this estimate it seems as though wheat raising in Dakota, ought, under most any circumstances, to be a profitable business.

Without doubt a medium sized, well constructed roller mill is the most desirable kind of a place for an apprentice to learn the milling business. In such a mill he will have the opportunity of learning something of *all* the various steps taken in the making of flour, while if he obtains a position in a very large mill, he will be set at one particular job and kept at that. He may learn the one duty to which he is assigned well, but that's about all.

L. LUM SMITH, of Philadelphia, the publisher of the *Public Herald*, has been for years doing good service to the public in exposing fraudulant and dead beat advertisers and frauds of all kinds. One of the latest exposures is that of a manufacturer of bitters, who published a testimonial favorable to his bitters purporting to be signed by Ex-President Arthur. When Mr. Arthur was written to asking if he had signed any such testimonial, an answer from his private secretary said: "I am directed to say that the pretended endorsement by the president of 'Dr. Petzhold's German Bitters' is false and unwarranted." Any person obtaining money on the strength of fraudulant testimonials is undoubtedly guilty of "obtaining money under false pretenses," a crime under the statutes of all states severely punishable.

PERSONAL.

Mr. C. C. Rice, Northwestern representative of the Richmond Manufacturing Co., Lockport, N. Y., called on us recently. His headquarters will be in Minneapolis.

John H. Nicolin is in St. Louis, representing the Wilford & Northway Manufacturing Co., of Minneapolis.

Mr. J. A. Christian, the President of the Millers' National Association, has been to New Orleans, has gone to Cuba, and will stop for awhile in Florida on his return home, which will, probably, be early in April.

Charley Gratiot, well known to thousands of millers throughout the country, is now the St. Louis agent for Kirk & Fender.

We were favored with a call, March 20, by Geo. T. Zimmerlie, Esq., well known to many millers throughout the country. He is now traveling in the interest of the Jonathan Mills' Universal Flour Dresser, and Cummer Engine for the Cummer Engine Co., Cleveland, O. Many Wisconsin millers will be interviewed by him this month.

Messrs. L. M. Sherman, I. G. Dreutzer, J. Smith and Mr. Washburn, of Sturgeon Bay, Wis., made us a pleasant call during March.

HARD ON DEFAULTERS, EMBEZZLERS ETC.

The Dominion of Canada has for a long time been a land of refuge for embezzlers, forgers, etc., whose crimes were committed in the United States. That harbor of refuge will soon be closed to such criminals, and the chances for them to escape the demands of justice will be almost entirely cut off. An extradition treaty is now being negotiated, which includes in its list of extraditable offences: forgery, embezzlement, larceny, the counterfeiting or altering money or the issuing of counterfeit or altered money, obtaining money or goods under false pretences, crimes by bankrupts against bankruptcy laws, and frauds by bailees, bankers, agents, factors or directors or members of public affairs of any company which are made criminal by any law for the time being in force. It is announced that the Government of the Dominion is desirous of making the scope of the new treaty as extended as possible, so that whatever prospects of immunity now exist for criminals of either country may be wholly removed. Under such favorable circumstances, it ought not to be difficult to frame a measure which would render the lot of the absconding criminal a hard one, at least as far as North America is concerned.

A CRACKER WAR.

From the action taken March 25th by the executive commitee of the Cracker Bakers' Association, it is evident that reductions will shortly be made in the price of crackers, at the expense, perhaps, of their quality. The executive committee, which is composed of members of the association from the western, southern, and southwestern branches, met March 25th at the Grand Pacific Hotel, Chicago, and agreed to suspend all rules and prices heretofore governing the association. This decision disbands the organization, and prices will now only be governed by the caprice of the manufacturer. The association was formed four years ago, and had a membership of 115 bakers from the southern and western parts of the country, and had jurisdiction from Pittsburg to the Missouri river and from Minneapolis and St. Paul to New Orleans. At the last annual meeting, which was held sometime in February of this year, E. Nelson Blake was chosen president. The association has always governed the prices and regulated the manufacture of crackers, and while undoubtedly it has made the price of crackers higher, at the same time it has elevated the standard.

For some time past several of the members have been cutting prices, much to the annoyance of those who wished to abide by the decisions of the association, and the result was that a meeting of the executive committee was called and the organization broken up. This will doubtless have the effect of bringing about a general war, and in a short time the prices in crackers will be cut right and left.

WHAT OUR MILLING EXCHANGES SAY.

REDUCING ELEVATOR CHARGES.—It is somewhat amusing to watch the struggle which results from any attempt to reduce, in these times of low values, the cost of any commodity not in actual popular use. The grain elevators of New York furnish an instance of this kind. Their owners have organized and are making a vigorous fight against a bill now pending in the state legislature for the reduction of elevator charges. They claim that they are not making mine per cent. on their investment, and that the average life of an elevator is not over twenty years. This is sad, if true. The produce exchange is said to side with the elevator monopolies, which is probably for the reason that if agitation for a reduction of commissions was begun, they would expect the elevator men to help them stave it off. It is the high commissions charged by grain brokers and contempt for small deals that has built up the thousands of bucket shops throughout the country. That this is true does not prove that commissions are too high, though none will deny that they are liberal, even for good times. It costs more to carry on the brokerage business now than it did years ago, and the unmistaken tendency of the age is to enhance the cost and profits of middlemen. Any reference to this fact, however, or any move toward reform and retrenchment is so promptly and vigorously resented as to frequently amuse and even to excite derision.—*Northwestern Miller, March 20.*

ABOUT WHEAT PRICES.—We have been rather amused at the self-congratulatory articles which have been published from time to time in journals which have tried to persuade grain buyers that prices must soon go up. A few languid spurts have taken place, and on each such occasion the writer flourishes out a fine statement and says: "I told you so six months ago." Then down go the prices again, and those who have been mulcted in losses are comforted with the assurance that there is no justifiable reason whatever why values should not have been maintained. The real truth is, that wheat prices have gone down never again to rise to what had been looked upon as normal rates. For a long time speculation propped up the drooping markets, but the load accumulated until it could be supported no longer, and after the crash it became apparent to the more conservative that in the graduated scale of wheat values the normal line must be drawn at lower figures than had previously been thought possible. Political complications might possibly temporarily interfere with current quotations, but supply has so far overtaken demand as to justify a readjustment which cannot be disregarded.—*From the Millers' Journal for March.*

A TIME TO EXAMINE.—During the winter, which we hope is nearly over, all mills have been subjected to unusual adverse influences by the sudden changes and unprecedented cold weather, especially in the Southern States; hence it behooves the management and engineers that the first thing after the cold weather is over and the frost out of the ground that they examine carefully all shaftings, drums, and pulleys, for if they have even run all right during the winter, most of them will be found out of line when things get settled back in the spring. Whether our winters are unusual or not, we have found it one of the very best investments to have all these things gone over by a mechanical expert, once, or perhaps twice, every year. If they are all right it costs but little, and if an insignificant error is found, a short run will often pay a thousand per cent.—*From the Miller and Manufacturer for March.*

A SCHEME.—They've gotten up a great scheme down in Moore county, North Carolina, in the success of which all mill-furnishers should take a lively interest. They have founded a city or village, named it Vineland, and propose to deed a lot 46x100 feet to every editor who will carry a twenty inch ad, subject to six changes, for one year. They seem to have a hankering for editors down among the "Tar heels," and united action upon the part of mill-furnishers may serve to encourage a few editors of milling papers to embrace this liberal proposition. The thing's worth trying, anyhow. We'd very seriously contemplate acceptance but that we have a mission to fulfil.—*From the Milling World, March 23.*

THE HENNEPIN CANAL.—The Congress of the United States brought its session to a close on March 4, and it was an ignominious close of an ignominious Congress. Like its predecessors for the past dozen years, it accomplished nothing. It did not even make political capital, which every Congress is supposed to do, whether it does anything else or not. It passed a few good bills and some bad ones; but its chief sins were sins of omission. There are any number of important questions that seek solution at the hands of our Congress, but Congress is too busy with something else.

The Hennepin Canal project was one that was sinned against by the last Congress. If that august body had confined itself to legislation no one could complain because this or that item failed of passage. But the House of Representatives has of late years occupied itself almost entirely as a body for disbursing the public funds, and on this ground the Hennepin Canal should have received some consideration. But it was thrown out of the appropriation bill, and the bill itself killed. Congressmen still see the Hennepin Canal through a glass, darkly. And the glass is inverted and empty, too. There is too much *glass* legislation at Washington for anything that is meritorious to stand a show. But the Hennepin Canal will go through all the same. It may take time, but it will go through yet. *From the American Elevator, March 15.*

MILLING IN AUSTRALIA.—Sir:—I beg to forward you the following remarks in answer to some questions asked regarding wages for millers in Australia in your number for December last. Wages for millers, that is to say, men who have been apprenticed to the trade and can do good mill work, including stone dressing, vary between £2 to £2 10s. per week with board, or £3 to £3 10s. per week if they find themselves. The above does not include overtime; the regular hours are from 6 a. m. to 6 p. m. Anyone who comes out must make up his mind to have nothing whatever to do with *drink*. In England it is the custom to have a glass when at market, and at other times, and no harm is done. In Australia it is very different. The climate being hot is apt to create thirst; on the other hand, a glass of wine or of spirits, instead of allaying thirst, only serves to intensify it. The blood—which on account of the heat is thin—gets excited, and a perpetual craving for drink is soon created. This will lay such a hold of a man that he will find it impossible to shake off, and he begins to go down the hill. Many a young man who set foot in Australia with excellent prospects before him, is to-day without a sixpence or a home. In many cases a downward career is commenced on board a ship. I should advise anyone going out to Australia not to take a lot of extra clothes with them, as they can get clothing just as cheap out there as in England, and it will be more suitable for the climate. In conclusion, I may say that in Australia there is a grand field open for millers who know their trade and are not afraid to work.—*Correspondence of The Miller, London.*

MORE CHANGES POSSIBLE.—The mill owner who sits quietly in his office has, during the past year or two, felt an assurance, which has gradually grown stronger, that the days of great changes in milling operations were passed. There was a time when there was no rest, no assurance of this kind. When one said to him, "This change will certainly be the last." he could not but feel that there was little dependence to be put on what was said, and however well he might be doing he lived with the dread of what was to come; that the money which he had spent would be for naught, and that he would have to go through the same thing again, and buy new machines. After the thing got to going once, after the spirit of change and revolution had taken possession of the minds of the millers and mill-furnishers, it appeared that there was no end. Bnt the end apparently came, and, as said before, there now appears to be a time of peace and security. After the great boom in milling machinery had in a measure subsided, there were a few who attempted to start little boomlets of their own—revolutions on a small scale, but they did not revolve; there was no overturning. A revolution implies something more than a change of detail. There must be a change of principle at the bottom to bring about results which are radical in their nature. The foundation of the milling revolution was the recognition of middlings. We may look for improvements and changes in detail, and it is not at all improbable that there may be such changes, such inventions, as will create quite a little disturbance. They lie in the direction of the simplification of present methods. There are a number of inventors of ability and energy working in this direction. Judging from a record of their past achievments which have been successful, we cannot but believe that within the next six months or a year there will be presented to the attention of the millers of this country new machines and new ideas, and of a character quite startling on account of their simplicity and the directness with which they reach results which are now brought about by great circumlocution and complication of mechanical devices. — *The Modern Miller for March.*

OUR NEW COMPETITOR.—As, noted elsewhere the Canadian Pacific Railway Co. is sounding the praises of Manitoba wheat and flour in the British Islands in the hope, of course, of building up a profitable trade for itself. Rumor has it that this company has even gone into the business of buying and shipping wheat abroad as a means of making the products of the Canadian Northwest better known in the markets of the world. This is a matter affecting the interests of all American millers, whether exporters or not, for any permanent diminution of our flour exports would result, for the time being at least in demoralizing trade at home. Whether Canadian flour takes the place of American flour in British markets, or British millers by obtaining an inexhaustible supply of No. 1 hard wheat at a low price can shut out our flour, amounts to the same thing in the end; that we lose the patronage of our best foreign customer in the matter of flour.

It is best to look the matter squarely in the face. There is nothing to be gained by deceiving ourselves as to the facts in the case, and therefore it would be folly to decry the character of the wheat which the Canadian Northwest is able to supply. Almost universal testimony accords to Manitoba spring wheat a very high character, equal to the wheat of any locality in the world. A disinterested correspondent of this paper at one of the flour centers of Great Britain, writes us as follows:

"The Agent General of the Canadian Pacific Railway Co., in London, has lately sent me samples of Red Fife wheat and a patent grade of flour made from it in Winnipeg. The wheat is ahead of any spring ever seen here. The flour is a grand sample, but owing to imperfect cleaning before reduction, or imperfect purification during reduction, I only class it as second grade patent. It has a higher water-absorbing power or capacity than any sample of Minneapolis or Glasgow spring flour I know of. In this flour I find 33¼ per cent. of moist gluten. The gluten of this Manitoban flour seems to me of a darker cast or shade of color than that of other spring wheat flour. The flour on that account is deficient in bloom, or a yellowish tinge; but the bread of two tests I have made is in no way affected, is in every way faultless * * * Beyond doubt there will be a rush by Glasgow millers on this wheat, and if the bulk is equal to sample Minneapolis will feel it."

There remain, then, only two points to be considered, viz: Whether this wheat can be set down in the British markets at a price which will compete with our Northwestern flour, and whether the British millers will properly treat their magnificent wheat when they get it. The first contingency is largely within the control of the Canadian Pacific Railway Co. The second is that British millers will have to give up this "blending" or mixing if they wish to produce an article of flour equal to the products of our own mills. In default of either of these contingencies the new competitor vanishes.—*American Miller.*

BUCKWHEAT MILLING.—The best way to mill buckwheat is to thoroughly scour, or rather hull it, before being reduced to flour, and New Castle stones are generally preferred for this purpose. The sizes are generally about thirty inches in diameter. The burrs used in grinding must be in perfect condition. The furrows should be the same depth from the eye to the periphery with a very fine feather edge, and dressed out smooth, using a furrow staff and a sandstone rubber, or preferably, an old piece of burr block, either of which is better than corrundum. Many millers put in from ten to twelve cracks to the inch, but it will be found that better work can be done with a smooth face.

There are various methods in use for clothing the reel, which is usually about ten feet long. Some millers use four feet of No. 6 cloth at the head of the reel, the remainder No. 7 or 8. Another method is to commence at the head with eight feet of No. 8, four feet of No. 9, and two feet of No. 2, on a fourteen-foot reel. A reel calculated to bolt ten bushels an hour is generally made ten feet long and clothed with three feet of No. 8, four feet of No. 10, and the remainder No. 1 cloth.

There can be sixty pounds of flour made from one hundred pounds of buckwheat. It is often run through the burrs twice and the chop passed through a fine reel, such as No. 14, to extract the middlings or cuttings. The second grinding may then be passed through the last described reel. All the middlings that pass through the coarse cloth should be reground after having been purified, but buckwheat should never be ground close at any time.

Too much attention cannot be given to the cleaning of buckwheat before grinding, and every miller who grinds buckwheat should have a first-class buckwheat huller in his mill. If he has not he should first simply crack the grain in the manner described and then clean it by the purifier and bolts, but a good buckwheat shucker or huller will pay for itself in a short time. By simply grinding the grain after being scoured a large portion of the shucks or hulls, and all of the thin yellow skin lying between the hull and the starchy part are ground and cannot be separated so well from the flour by bolting as if the grain has been operated on by a shucker, so that the flour is liable to be specky and dark; besides if the yellow skin be ground it imparts a very bitter taste to the flour. All matter that is likely to deteriorate the flour should be removed before grinding. If the grain is first dried the hull can be removed much easier.—JOHN D. NOLAN *in The Corn Miller.*

ANOTHER INFRINGEMENT CLAIM.—Notices of infringement have been sent by Elias Bomberger, and Francis J. Martin, of Lancaster Co., Penna., to the millers of the State, and possibly to those of other States, the claims being based upon an inprovement in flour bolts, patented by Ephraim D. Auchey and Francis J. Martin, May 30, 1871. Among other advantages claimed were a fan or beater placed inside of the bolting reel or machine, and an independent motion imparted to it in the same or reverse direction of the reel, through hollow gudgeons or sleeves on either end. The parties sending out the notices mentioned, say in them, that the invention proving very useful, other parties have since the granting of the patent, built and placed into market machines under various names of middlings purifiers, centrifugal reels, etc., in all of which, the invention of Auchey & Martin is used without leave or license. The circular winds up in the following summary manner: "This is therefore to notify you to call and settle for the machines you have in use within thirty days, and save the bringing of a suit against you." The specifications given in the notice are too vague to give an idea as to just what the claimants are after. No miller need be at all alarmed about the matter, and probably the best way to settle the affair would be for a miller to stand the threatened law suit, and if nothing came of it, to then try a little law on his own account.—*From the Millers' Review for March.*

A TIME TO BUY.—We have before asserted and we are disposed to reassert, that now is the best time the present generation will ever see to purchase machinery, put up new mills, or repair and reorganize old ones. Machinery men are anxious to sell, and are willing to do so at a fair profit. Orders are slack and business dull and the can afford to do work much below the rates of flush times, rather than to close up, or to work short time or short handed. These times will soon be over, business will start off anew, shops will be full of orders, prices will raise, and you will have to wait your turn. If you contemplate new works or improvements, do it now. All the advantages of best quality and low prices are on your side now, but as soon as the reaction sets in it will be on the other side, and you will have to pay a round advance for your negligence and delay. Iron, steel and all kinds of material are lower now than ever; labor is cheap and plenty, and the true business policy is to buy now when everyone wants to sell. Now, orders are eagerly sought for, soon you will be seeker instead of sought, and prices will rise accordingly.—*From The Southern Miller for March.*

IN building a new mill, the questions of what competition will have to be met, and what market the mill must work for, merit equal consideration with the questions of wheat supply, freight rates, etc. As the larger merchant mills are not standing still, but are improving their process of manufacture every year, it is absolutely imperative upon the smaller mills to keep even place with them, or else go out of existence. We do not believe that the smaller mills are doomed to extinction, but we do believe that they must be better built and better managed. It is idle to talk of competing with the Pillsbury or Washburn, or any other large mill, unless the same careful attention is paid to machinery, and system and equal care bestowed upon the detail of the business. —*The Millwright and Engineer.*

THE blame for the crowded condition of many of our mills, rests partly upon the millers who have let their desire for a large mill outgrow the size of their building, and partly upon the mill-builders and milling engineers, who have consented to plan and erect machinery in such cramped quarters. In the long run we believe both the responsible parties must suffer financially for every such mistake—the miller by reason of the inferior work done, and the mill builder by reason of the injury to his reputation that must result.

If you want a 150-barrel mill and only have a 75-barrel building, put up an addition to it large enough to provide for the extra space required. And don't be afraid of getting more room than is necessary. Better have too much than too little any time.—*The Roller Mill.*

GRAIN EXPORTS VIA NEW ORLEANS.—The exports of grain via the great Mississippi River and Gulf route is growing apace –the legitimate results of a proper recognition of a great natural highway to the sea. As many as eighteen vessels cleared from New Orleans during the month of February, loaded with grain from the boundless harvest fields of the Central West. Fourteen of the vessels mentioned sailed under the British flag, one under the German and three under the Spanish. Ten cleared for Liverpool, and one each for Rouen, Antwerp, Dublin, Bremen and Hamburg, Frederickhaven, Barcelona and Amsteadam. There were 743,927 bushels of corn and 49,669 bushels of rye taken out, the largest single cargo being by a British steamship, that of 104,649 bushels of corn, for Amsterdam.—*The St. Louis Miller.*

NONSENSE.

Mrs. —away, while cleaning house, asked her husband to nail up some []; he refused; she looked †† at him, told him his conduct was without ‖, and beat him with her 🧹 until he saw **. He now lies in a ,tose state and may soon be a subject for dis§. A man must be an * his life and limb in such a way as that. It has undoubtedly put a . to his existence.

Hearing that the brakeman's foot got caught in the frog, and he was run over, Mrs. P. remarked: "Law sakes! I've seen pretty big frogs down in Ille'noy, but they wus harmless and never attacked anybody. Did they kill the one that caught the brakeman's foot?"

"Just listen to this, Martha!" exclaimed Mr. Jarphly, who was reading his evening paper: "One of the dogs in the London prize show is valued at $50,000! Good gracious! That's more money than I ever expect to be worth in my life."

"Some dogs are worth more than others, Jeremiah," quietly remarked Mrs. Jarphly.

And Mr. Jarphly eyed her for a moment, and said she need not sit up for him that evening.

BEFORE AND AFTER.—"My dear," said Mrs. Popperman to her husband last evening, "I was looking over a bundle of old letters to-day, and found this one which you wrote to me before we were married; when you were young and sentimental."

"What does it say?"

"I'll read it: 'Sweet Idol of Lonely Heart: If thou wilt place thy hand in mine, and say, dear love I'll be thy bride, we'll fly to sunny Italy, and there 'neath soft cerulean skies we'll bask, and sing and dream of nought but love. Rich and costly paintings by the old masters shall adorn the walls of the castle I'll provide for thee. Thy bath shall be of milk. A box at the opera shall be at thy command, and royalty shall be thy daily visitor. Sweet strains of music shall lull thee at eventide, and warbling birds shall wake thee from thy morning slumber. Dost thou accept? Say yes—oh, fly with me.'"

"And I flew," said Mrs. Popperman. "But if I had been as fly as I am now I wouldn't have flown."

"Why, my dear?

"Why, not? Have you done as you promised in that letter? When we were married did we 'fly to sunny Italy and bask 'neath soft cerulean skies;' did we go to Hoboken and spend two weeks fishing for eels on the end of a wharf?"

"Well, yes."

"And how about the pictures? You know very well that every rich and costly painting in this house is a chromo from the tea store."

"Well?"

"'Thy bath shall be of milk.' Do I bathe in milk? or isn't it like pulling teeth every morning to get ten cents out of you to buy milk for the baby?"

"Kinder."

"'Royalty shall be thy daily visitor.' The only visitors I have are the book agents and the clam peddlers."

"'Taint my fault."

"'Sweet strains of music shall lull thee at eventide.' Oh, yes. The only chance I have to listen to the strains of music is when you and I go out walking at night and follow a monkey and a hand organ around the block."

"Oh, I am so sleepy."

"I don't care if you are. Where are the warbling birds you promised me? I hear Mrs. Maginnis' crowing roosters every morning; perhaps they are what you meant."

"Well, never mind."

"But I will mind. I was to have a box at the opera. Where is it? The only time I go to an opera is when you get bill-posters' tickets to a dime museum."

"It's too bad."

"It really is too bad. And then you said we'd talk and 'dream of nought but love.' Since I married you we've talked and dreamt of nought but rent. Good night sir."

And Mrs. Popperman turned out the gas, and jumped into bed, leaving Mr. Popperman to bark his shins against the bureau in trying to grope to bed in the dark.—*N. Y. Citizen.*

THE driven well patents of Nelson Green expired on the 14th of January, 1885, so that it is now possible for farmers and others to drive wells on their premises without fear of vexatious law suits, or of being compelled to pay a royalty to any one. It is generally believed that the patents were improperly issued, driven wells being in use long before they were granted. But it is a satisfaction to know that whether rightly or wrongly issued, they are no longer in force.

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E. HARRISON CAWKER, EDITOR.

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MILWAUKEE, APRIL, 1885.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. *You will thereby oblige not only this paper, but the advertisers.*

D. G. TEPPER, ESQ., Editor of *The Millers' Journal*, New York, made us a very pleasant call, March 30th.

A FRENCH company has recently patented a method of cool grinding by means of rolls in which water or some other cooling liquid is allowed to circulate.

WE hereby acknowledge the receipt from the secretaries of the annual reports of the boards of trade in New York, Boston, Philadelphia, Chicago, Detroit, St. Louis, Minneapolis, Buffalo and San Francisco.

Mr. Geo. C. Tietjen, representing the Stilwell & Bierce Mfg. Co., of Dayton, O., and Mr. W. R. Hobkirk, representing the American Oak Leather Co., of Cincinnati, O., made us a pleasant call April 1. They report business improving.

MESSRS. EDW. P. ALLIS & CO. have sent us a copy of their new catalogue concerning porcelain roller mills. It is a handsome piece of work, and some exceedingly favorable offers are made to millers to induce them to try the use of porcelain rolls, which shows conclusively the great confidence the firm has in them. The catalogue also contains letters from many millers using porcelain rolls.

1,500 CONUNDRUMS.—We have just received from the publishers a handsome little book with the above title, which contains over fifteen hundred conundrums, suitable for home and fireside amusement. One feature of it is that the conundrums are all original, and have never appeared in print before. It contains 116 pages, with handsome paper cover, and and will be sent post-paid to any address upon receipt of 15 cents.

AN IMPORTANT MISSION.

Mr. C. H. Seybt has been sent by the executive committee of the Millers' National Association on a mission to Europe to meet European millers and to establish a code of regulations for the future conduct of the American export flour trade. The items to be provided for affect flour sacks, bills of lading and transportation in general and in particular, insurance and a court of arbitration for the settlement of and disputes that may arise. Mr. Seybt has a very extensive acquaintance with the European trade and is a gentleman of great executive ability and we do not doubt but what he will be able to secure the adoption of rules, which will be just and satisfactory to dealers on both sides of the water.

IT is to be feared that the president of these United States was not aware how intimately acquainted Rasmus B. Anderson is with the king of Sweden and Norway. when he appointed him minister to Denmark instead of to the former countries. Some years ago, while stopping in Christiania during a visit to Norway, the ex-professor and insurance agent learned that his majesty King Oscar was to travel on a certain steamer going down the bay. He immediately shouldered his grip-sack and took passage on the same boat, expecting, of course, that the king would eagerly embrace the opportunity of learning something from the distinguished American. No matter who started the ball rolling, but the two great men engaged in conversation, and the king, among other things, said: "It is a fine country you have over there in Wisconsin." "Yes," answered the professor, "a fine country and a fine people. We are all princes in that country." The king straightened himself up to his full height of six feet three inches, took out his cigar case, selected one for himself, and offered the case to the professor, with these words: "May I offer your royal highness a cigar?" And Rasmus smilingly accepted.

A WONDERFUL MODEL MILL.

Messrs. Edw. P. Allis & Co., of Milwaukee, caused to be built for exhibition at the New Orleans Exposition, a complete model 50-barrels roller flour mill. The model is built to scale, being one-eighth the actual size of such a mill. It is fitted up with little Gray's noiseless belt drive roller mills, Geo. T. Smith middlings purifiers, grain cleaning machinery, flour packer, weighing scales, etc., and is driven by a model Reynolds-Corliss steam engine, just as a mill of full size should be. We present in Supplement No. 1, with this issue, a very perfect view of this ingenious piece of mechanism, and in Supplement No. 2, we present perfect views of the well known Gray roller mills. This model mill has been an object of great attention at New Orleans, and thousands not in the trade have obtained a pretty fair idea of modern milling by closely observing it, and it has also been an object of attentive study by millers from all parts of the world.

[Written for THE UNITED STATES MILLER.]

MARKET REVIEW.

Flour, in the early part of the month, was slow of sale, owing in a great measure to the large quantity detained here on cars and in warehouse, which could not be moved on account of the ice blockade on the lakes. In the last two weeks of the month, and as navigation opens, the demand has improved and a rather firmer feeling has existed. Local jobbers have shown more disposition to purchase, taking both spring and winter wheat flours, whilst exporters are making more inquiries, and several orders have been filled. Cable orders received are still a shade under the views of millers, though in some instances buyers have slightly raised their limits above those of last week; some holders adhering to full prices, preferring to hold their flour off the market for a time in anticipation of realizing better prices. Liverpool (England) advices indicate an active demand for both wheat and flour at firmer prices, and stocks which had been accumulating had been rapidly cleared off. Minnesota flours were worth about 32*s*. 6*d*. for patents and 26*s*. to 26*s*. 6*d*. for bakers.

New York reports a very dull market for state and western flour, dealers showing but little inclination to purchase, even at the present low range of prices, which for some grades show a decline. The exports this year as compared with last are as follows: Since January 1, 1885, 1,423,244 bbls., and for same period in 1884, 1,157,255 bbls.

Western shipping extras are quoted at $3.15@3.40; superfine, $2 60@3.05; St. Louis common to fancy, $3.85@4.60; city mills extra, $3.80@4.70; patents, $5.00@5.25. The demand from the trade continues moderate, and prices are about steady. We quote: Rye flour, $3.45@3.80 for superfine brands and $2.25@2.50 for fine brands, with a firm market, holders not pressing sales. Buckwheat flour ranges from $2.25@2.50 per 100 ℔s. There is a marked absence of speculation in the flour market, notwithstanding the heavy war clouds presently embarrassing the powers of Europe. Under liberal offerings of flour, British markets continue dull, although a better inquiry has been manifested in the past month, and a general feeling prevails that with spring weather flour will meet with an improved demand at firmer prices.

The quantity of flour manufactured annually in the United States is about 66,000,000 bbls., of which, in 1884, the Minneapolis mills turned out 5,318,000 bbls., about one-twelfth of the whole manufacture. Minneapolis received, in 1884, 29,322,672 bushels of wheat, of which over 84 per cent. was made into flour on the spot, and less than 16 per cent. was shipped. Of the 5,318,000 bbls. of flour made in 1884, about 65 per cent. was shipped to Europe.

Mill-feed is firm, with a good consumptive demand. We quote: Bran, $13.00@14.15; coarse middlings, $14.00@14.25; fine, $15.00, free on board, at Chicago or Milwaukee.

Wheat markets have ruled steady throughout the month; occasionally panicky, caused by the changing situation of foreign political affairs. English cables at times noted an advance and at other times a decline, foreign advices upon the whole being rather unfavorable. At Chicago and Milwaukee markets considerable excitement has been manifested on several days during the month, and large blocks of wheat changed hands. Here prices opened on March 2d at 78¾c. for May wheat and closed on the 31st at 78¾c. for May, showing little or no change. Fluctuations, however, have at times been so sudden and violent that parties have found it difficult and sometimes impossible to execute stop orders at the limits set for them.

The *Mark Lane Express* of March 30th, in its review of the British grain trade for the last week, says: "Fine weather has brought spring sowing nearly to a close. Sales of English wheat were at 32*s*. 7*d*. as against 38*s*. 1*d*. for same time last year. Foreign wheat recovered from its depression, off-coast business was confined to the sale of one cargo of Oregon at 35*s*. 4½*d*. and one cargo of California at 35*s*. 3*d*. Nine cargos arrived; two were withdrawn and ten remained. There are due twenty to twenty-five cargos, mostly California. The markets were generally quiet. Flour, steady and 6*d*. dearer."

For the present, and pending a settlement of existing differences between Great Britain and Russia, we may expect a good demand from Europe for American products. Importers on the other side of the Atlantic will not undertake the risk attending the purchase of property at Russian ports, with the chances of its being locked up by blockade in the event of war. So long as preparations for war by England and Russia continue on the present extensive scale, the attention of British merchants will be directed more to American markets for supplies of wheat, flour and provisions. We may also look for an increased amount of tonnage being headed for American ports. British vessel owners will not undertake the risks attendant on having their vessels on passage to and in Russian ports should war be declared.

The following was the visible supply of grain on the dates named, as reported by the statistician of the New York Produce Exchange, and does not include Minneapolis and St. Paul:

	March 21, 1885.	March 28, 1885.	March 29, 1884.	March 31, 1883.
Wheat, bu.	43,766,592	43,660,972	28,580,898	22,631,645
Corn, "	8,194,563	9,558,283	17,773,877	17,788,249
Oats, "	3,092,075	3,086,182	5,021,493	4,320,782
Rye, "	364,670	359,153	2,248,604	1,910,863
Barley, "	1,386,975	1,201,824	1,517,341	1,489,978

Railroad freights are quiet on the basis of 15@17½c. per 100 ℔s. to New York.

Lake freights quiet and steady at 2¾c. for corn and 3c. for wheat to Buffalo, and 5½@6c. to Oswego.

AARON BURR was noted for being a very egoistic man, and an unbeliever in all the doxies of the day. He attended church in Albany, N. Y., with regularity, and always made it a point not to come in until services were commenced, it was supposed for the sake of being noticed when he walked down the aisle to his seat in the first row from the pulpit. The church authorities asked the pastor to publicly reprimand him, which he did in the following manner: As Burr was walking down the aisle, the minister stopped in his discourse and said: "Sir, I will appear at the judgment seat against you." Burr drew up his little figure, and in his rich bass voice said: "Sir, in all my legal practice I have considered that class of criminals who turned State's evidence the most degraded and to be despised."

MANAGEMENT OF PURIFIERS.—The Geo. T. Smith Middlings Purifier Co. give the following hints on the management of the purifier: Always load a machine as heavily as possible without making the tailings too rich. If necessary let the purifier return to itself sufficiently to accomplish this end. Cut off and return a few inches from the head of the machine to avoid specks. Until the machine is properly adjusted the pockets should be emptied daily, but whenever it is possible to judge closely enough as to waste no harm will be done if they are not emptied. On extremely coarse middlings if very strong air currents are desired increase the speed of the fan by decreasing the diameter of the pulley on fan shaft. As the air is decreased the sifting capacity of the sieve is increased, therefore you can reduce the richness of the tailings by reducing the volume of air on the tail section of the cloth, or *vice versa*. When dust collectors are used in connection with the purifier, careful examination should be made to see that they do not impede the necessary flow of air through the cloth. Air currents of proper strength can be maintained by suitably increasing the speed of the fan.

PERSONAL KNOWLEDGE.

Hidden or occult knowledge might have been once a part of the mental paraphernalia in which scientists dressed their discoveries, and inventors concealed their improvements. But occult knowledge is not a thing of the past, even in these days of mechanical exactness and experimental demonstration. It is possible for a workman to hold some method or process so securely that, even if willing he may find it difficult to impart it to a learner. This statement does not refer to "tricks in the trade" which are mere mountebank pretensions, but to real knowledge of absolute value that cannot be readily imparted. When a man is found who possesses this knowledge in any department of mechanics, he is a valuable man; what he knows on his own specialty he knows thoroughly. There can be no question that Cicero's statement, "Poeta nascitur, non fit," is an absolute truism when applied to some workers in mechanics—they are not made, but they are born mechanics.

Illustrations of this fact are probably familiar with many experienced and elderly mechanics. There is a tool maker in an extensive establishment, in which coiled springs of steel wire are largely used. The springs are wound from the annealed wire, and after being completed are hardened and tempered. Some of them are "open" and some are "close" springs. Out of 22,000 springs of which an account was kept in consecutive workings, only six springs failed the severe trial test. The temperer was unwell and out for eight working days, and of the springs hardened an tempered by his assistant, who had a year's instruction, less than one-half passed the test. In this case the writer had reason to know that the temperer had used his best endeavor to have his assistant his ultimate successor. Some lack of sensible impression made by heat and color on feeling or on sight must have been the cause for the difference between the result of the assistant's work and that of his teacher.

There is an old machinist now living, but superannuated, who was famous in his day for his superior hand-made edge tools. A pocket knife with a restored blade of his workmanship was doubled in value because he had made it. This was before the manufacture of cutlery had been attempted in this country. His two sons succeed him, but they have never been able to equal their father in this direction.

At a large manufactory of sword blades for army purposes, masonic and other regalia, one man has tempered them for many years. Although he has been engaged in other business for years, he is called whenever a batch of blades are to be tempered. Although he is willing to impart verbal instruction and help a learner, he has never had a pupil to equal him.

There is a large scythe manufactory in a New England town, making 14,000 dozen scythes a year, and the president of the company has for years hardened and tempered every scythe that leaves the works, because no other man in the works can do so well.—*Scientific American.*

MILLING PATENTS.

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

Issue of February 24, 1885. No. 312,623—Roller-mill; F. Ferrier, Vallejo, Cal. No. 312,672—Bolting-reel; A. J. Terry, San Francisco, Cal. No. 312,744—Grain-screen; D. D. Mook, North Pembroke, N. Y. No. 312,914—Flour-bolt; G. T. Smith and W. F. Cochrane, Jackson, Mich. No. 312,968—Apparatus for filling and heading barrels; A. C. Cary, Boston, Mass. No. 313,028—Dust-collector; J. M. Sprinkel, Sterling, Ill.

Issue of March 3, 1885. No. 313,144—Sweep-coupling for Grinding-mills; E. M. Wilcox and W. J. Hopkins, Whitewater, Wis. No. 313,152—Flour-bolt; J. B. Allfree, Cumberland, Md. No. 313,166—Grist-mill; C. J. Blum, Salem, N. C. No. 313,312—Roller-mill; J. W. Galloway, Dayton, O. No. 313,337—Hominy-mill; C. C. Jesse, Charleston, S. C.

Issue of March 10, 1885. No. 313,712—Grain-scourer; G. A. Dawson, Cardington, O. No. 313,756—Centrifugal Flour-bolt; C. E. Moyer, Stevens Point, Wis.; No. 313,816—Roller-mill; J. M. Finch, Jackson, Mich. Reissue, No. 10,571—Roller Grinding-mill; F. Wegmann, Zurich, Switzerland.

Issue of March 17, 1885. No. 313,911—Grain-cleaner; D. Best, Albany, Oreg. No. 313,984—Grain-huller; F. Burchardt, St. Charles, Mo. No. 313,987—Machine for Cutting Oats &c.; F. Burkhardt, St. Charles, Mo. No. 313,988—Bolting-reel Attachment: F. Buckhardt, St. Charles, Mo. No. 313,989—Grain-huller; F. Buckhardt, St. Louis, Mo. No. 313,997—Machine for Hulling Corn; C. S. Day, Waverly, Md. No. 314,123—Grain-cleaning Machine; J. D. and H. Hasselbusch, St. Louis, Mo. No. 314,137—Attachment for Flour-bolts; J. M. R. Kennedy, Dushville, Mich.

Issue of March 24, 1885. No. 314,278—Scraper for Roller-mills; J. Warrington, Indianapolis, Ind. No. 314,370—Grinding-mill; J. A. Field, St. Louis, Mo. No. 314,439—Grain-scouring and Cleaning Machine; H. Dietz, Berlin, Germany. No. 314,497—Separating-machine; No. 314,498—Dust-separating machine; P. Van Gelder, Sowerby Bridge, England. No. 314,552—Feeder for Roller-mills; J. W. Wilson, Brookville, Kas.

BALTIMORE'S GRAIN FACILITIES.

A correspondent of *Bradstreets'* says: "Baltimore is well equipped with facilities for the storage of grain. The Baltimore & Ohio Railroad operates four stationary elevators, and the Northern Central Railroad has two. Three of these are at Locust Point, two at Canton and one at Camden Station. These altogether have a capacity of over 5,000,000 bushels. The last elevator mentioned was built in 1883 for the local trade of the city. It was then expected that the erection of this elevator would indirectly increase the foreign trade in oats, but thus far no decided gain can be traced to it. In addition to the above there are four floating elevators, which can handle 14,000 bushels per hour. There have been no changes in the tariff of charges since October 10, 1833. The rate of 1½c. per bushel was then made for the first ten days, when the grain was received from cars. This includes weighing and delivering to carts or vessels, as well as wharfage and storage. When the grain is received from vessels the rate is 1½c. per bushel. For each succeeding ten days the charges are ⅛c. per bushel. If the grain is delivered in bags 1c. per bushel is added, and for screening and blowing the rate is ½c. per bushel. The inspection of grain at Baltimore is excellent, and last year the president of the Corn & Flour Exchange took pleasure in recalling the fact that from the day the first carload went into elevator A down to the present time, with the exception of a small lot of corn, not a bushel of grain has been posted as being out of condition."

CHANGES IN POSTAGE TO TAKE EFFECT JULY 1, 1885.

The following important changes were made by the Congress just adjourned, in the postal laws.

First—The weight of all single-rate letters is increased from one-half ounce each or fraction thereof to one ounce each or fraction thereof. The same increase of weight is allowed for drop-letters, whether mailed at stations where there is a free delivery or where carrier service is not established.

Second.—All newspapers sent from the office of publication, including sample copies, or when sent from a news agency to actual subscribers thereto, or to other news agents, shall be entitled to transmission at the rate of one cent per pound or fraction thereof, the postage to be prepaid. This is a reduction of one-half from existing rates.

Third—Any article in a newspaper or other publication may be marked for observation except by written or printed words, without increase of postage.

Fourth.—A special stamp of the value of ten cents may be issued, which when attached to a letter, in addition to the lawful postage thereon, shall entitle the letter to immediate delivery at any place containing 4,000 population or over, according to the Federal census, within the carrier limit of any free delivery office, or within one mile of the post-office or any other post-office coming within the provisions of this law which may, in like manner, be designated as a special delivery office; that such specially stamped letters shall be delivered between 7 o'clock A. M. and midnight; that a book shall be provided in which the person to whom the letter is addressed shall acknowledge its receipt; that messengers for this special delivery are to be paid 80 per cent. of the face value of all the stamps received and recorded in a month, provided that the aggregate compensation paid to any one person for such service shall not exceed $30 per month, and provided further that the regulations for the delivery of these specially stamped letters shall in no way interfere with the prompt delivery of letters as provided by existing law or regulations.

A WALL STREET WIT.

Perhaps the most popular man in the city among Wall street bankers and brokers, uptown club men, patrons and followers of the turf, and members of the New York Athletic club and the Racquet club is William R. Travers. Although a thorough and well-informed man of business, an able financier, and a capitalist, he is known best through his geniality, his kindly feeling toward young men, and his witty and humorous remarks.

In public places Mr. Travers is inclined to be reserved, and glimpses of his humor have depended on his intimate acquaintances for circulation. Some of his best sayings were years ago, when John Morrissey was in the hight of his glory. Morrissey thought he knew a good race-horse when he saw it, but the colts that he tried to run at Saratoga were costly animals for him. While he was patting one of his colts on the track one day Mr. Travers walked by.

"What have you g-got there, John?" he asked, as he stopped near the animal.

"A race-horse." Morrissey replied, with an air of satisfaction.

"A r-race-horse!" Travers exclaimed.

"Yes, sir, a race-horse. Are you going to bet on him?"

"Yes, I'll bet on him," Travers replied decidedly.

"How?" Morrissey asked, somewhat in doubt.

"I'll c-copper him."

A former acquaintance in Baltimore met him on Broadway, and, turning aside, began to chat with him.

"You stammer more since you have lived in New York," the friend remarked in the course of the talk, "than you did in Baltimore."

"B-b-bigger place," Travers replied.

At the call of the list in the stock-exchange a dispute arose over a bid for a stock. Mr. H. G. Stebbins is credited with being the gentleman in opposition to Mr. Travers. Stebbins asserted that he named the price.

"It may be that Mr. St-Stebbins g-got through before I did, b-but I'll b-be hanged if I didn't b-begin b-before h-he did," Travers replied.

The stock was awarded to him.

A story told about him in Brooklyn relates to a visit there to attend the wedding of the daughter of a friend who lived in Montague street. It was his first visit in the neighborhood, and after he had ascended the stairs half-way up the hill from the ferry, he went astray in Montague terrace, and was at length compelled to ask for directions.

"I desire to reach M-Montague street," he said to a passer-by. "Will you b-be k-kind enough to p-point the w-way?"

"You are g-ing the wr-wrong w-way," was the stuttering reply. "That is M-Montague street."

"Are you m-making fun of m-me, m-mimicking m-me?" Traverse asked, sternly.

"N-no, I assure you, sir" the other replied, with all due haste to repair an apparent lack of good manners. "I-I am as b-badly af-flict-flicted with an ob-struc-struction of speech," as you are.

"Why d-don't you g-get c-cured?" Travers asked, with mischief in his eyes. "G-go to Dr.—and you'll g-get c-cured. D-don't you see how well I talk? He c-cured m-me."

"Men with gigantic schemes have sought him time and again. Once he was appealed to by a gentleman who wanted to sell a mine. He showed all the reports, and said he had taken $1,000,000 out of the mine. He was willing to sell the property for a sum considerably less than the amount produced.

"If you ha-hadn't ta-taken anyth-thing out I think I would ta-take the m-mine," Travers responded.

He had his adventures at the democratic convention which nominated Gen. Hancock for president. The day after the nomination Mr. Travers, while walking up a street, was accosted by a stranger who was carrying more liquor than was good for him, and had a box of cigars under one arm.

"Say! Are you a Hancock man?" was the greeting.

"Yes, "I'm a H-Hancock man," Travers replied.

"Well, it's darned lucky for you. Take a cigar; they're first-raters. I'm working for my candidate, I am, an' working both ways, too."

Accepting the cigar without offense, Travers walked on, but, hearing a row behind, turned and looked back. He saw the Hancock man pounding citizens who didn't happen to be for his candidate.

"Then," Travers said afterward, in describing the incident, "I b-began to understand b-both ways of w-working."

Two raps for Henry Clews, the banker, are recorded. It has been a frequent boast of Mr. Clews that he is a self-made man. Travers heard him on one occasion, and immediately dropped into a sort of reverie, with his eyes fixed on Mr. Clews' bald pate.

"Well, what's the matter, Travers?" Clews asked, somewhat impatiently.

"H-Henry," Travers inquired, "d-didn't you s-s-say you were a self-made m-man?"

"Certainly; I made myself," Clews replied warmly.

"Then, when you were ab-b-bout it, why d-didn't you p-put m-more h-h-hair on the t-top of your h-head?"

The famous Vanderbilt ball exercised many gentlemen on the question of characters and costumes. Mr. Clews was in a quandary, and he applied to Travers for a suggestion. It appeared that Travers had taken advantage of his friendly relations with Wallack, Mapleson and Abbey by sending inquiring friends to them for permission to select from their theatrical wardrobes. The story goes that the managers had mildly hinted to Travers that patience with the "fashionables" had ceased to be a virtue, and Travers was not inclined to favor any more.

"Clews," he said, after some reflection, "why d-dont you sh-sh-ugar coat your h-head and g-go as a pill?"

No doubt his most severe remark touched on the reputation of a well-known lawyer. While standing at the window of his office, Travers surprised several friends who were chatting at one side by a forcible exclamation.

"There!" he added, quickly, and pointing across the street; "there's 'Slem' B-Barlow with his h-hands in his own p-p-pockets.

Besides knowing how to rap others, Travers knows when he receives a rap. Going up town with several brokers, Travers spied a man selling parrots in front of St. Paul's church.

"H-hold on, boys," he said, mysteriously, "we'll have some f-fun."

Hailing the parrot-seller and indicating one of the birds, Travers asked: "C-can that p-parrot t-talk?"

"Talk?" the man replied with a contemptuous sneer. "If he can't talk better than you can I'll ring his blasted neck."

"C-come on, b-boys," Travers called out; "this f-fun is p-post-p-poned until another d-day."

A young friend, who had taken his advice in regard to a fortunate speculation and withdrawn his money from Wall street, bought a house. Subsequently Travers met him and asked him how the house suited.

"The house is all right, Mr. Travers," the friend replied; "but I am very much troubled with rats."

"G-get a c-cat," Travers suggested.

"I've had dozens, but the rats actually drive them out of the house."

"G-get a d-dog," was Travers' second suggestion. "I know where you c-can g-get a g-good d-dog."

He reccmmended his friend Harry Jennings, the dog fancier, and agreed to go and help in selecting a dog. One was thought worthy, and Jennings, having put o dozen or more rats in the pit, it was thrown in to show how quickly it could kill them. The dog killed all except one—a gray-bearded old rat almost as big as the dog—which seized the dog by the lower lip and held on. The dog y. lped with pain and tried to shake off the rat, but without effect.

Travers, who was thoroughly excited and running around the pit, shouted:

"B-buy the rat! B-buy the rat!"

Plunger Walton was introduced to Travers at Saratoga when the former was at the height of his success in breaking bookmakers and poolsellers.

"I've wanted to know you some time, Mr. Travers," Walton said after a while. "We can do business together. I've got good judgment on horses and horse-racing, and you have on stocks and stock speculations. I've made $350,000 on horse-races in the past two years. Now, you give me points on stocks, and I'll give you points on horses. What d'ye say?"

"You've m-made three h-hundred and fifty th-thousand d-dollars on h-horse-racing?" Travers repeated.

"Yes, sir; $350,000 in two years," Walton said again.

"And you want m-me to g-give you a p-point on st-stocks?" Travers continued.

"Yes, if you please, in return for my points on horses," Walton said.

"Well, I'll g-give you a first-rate p-point," Travers said. "You've m-made th-three h-hundred and fifty th-thousand d-dollars in t-two years. Then st-stick to your b-b-business. It's a first-r-rate p-point."

Another story in reference to points is this: Travers wanted to do a favor for a friend, and he said to him: "If you'll c-come and see m-me in September I c-can g-give you a p-point that will m-make m-money."

Following the suggestion the friend dropped in to see Travers the latter part of the month mentioned.

"H-have you c-come for that p-point?" Travers asked.

"Of course," was the reply.

"Well, you're the luckiest d-dog I know. I p-played that p-point two we-weeks ago and lost a p-pot of m-money. You st-stick to m-me right c-close, and I'll l-land you in the p-poor-house, sure."—*New York Times.*

WOOD-POLISHING WITH CHARCOAL.

A Paris technical journal thus describes a method of polishing wood with charcoal: "All the world now knows of those articles of furniture of a dead black color, with sharp clear cut edges and a smooth surface, the wood of which has the density of ebony. Bringing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself. The operations are much longer and much more minute in this system of charcoal-polishing, which respects every detail of the carving, while paint and varnish would clog up the holes and widen the ridges. In the first process they employ only carefully-selected woods of a close and compact grain; they cover them with a coat of camphor dissolved in water, and almost immediately afterwards with another coat composed chiefly of sulphate of iron and nut-gall. The two compositions in blending penetrate the wood and give it an indelible tinge, and at the same time render it impervious to the attacks of insects. When these two coats are sufficiently dry, rub the surface of the wood at first with a very hard brush of couch-grass, and then with a substance as light as possible; because, if a single hard grain remained in the charcoal, this alone would scratch the surface, which on the contrary they wish to render perfectly smooth. The flat parts are rubbed with natural stick charcoal, the intended portions and crevices with powdered charcoal alternately with the stick. The workman also rubs his piece of furniture with a piece of flannel soaked in linseed oil and the essence of turpentine. This process repeated several times causes the charcoal, powder, and oil to penetrate into the wood, giving the article of furniture a beautiful color and perfect polish, and which has none of the flaws of ordinary varnish."

DEEP BREATHING.

In this season, when coughs and colds are "all the rage," any method of preventing them, and checking the first symptoms without drugs, may be of inestimable value. Therefore the following suggestions are offered.

When you find you have a cough, and before it gets to be deep-seated, go into the air and practice deep breathing. Draw air into the lungs until they are completely distended, raising the arms above the head during inspiration to more fully expand the chest. Hold the air in the lungs for a few seconds, then breathe it out slowly. Repeat the operation a dozen times or more, and after an hour try it again.

Persistence in this treatment will often cure a newly-contracted cough in a few hours. If the cough is of long standing, pain may be felt under the shoulder-blades and across the chest during the breathing, but as this is caused by the tearing away of adhesion of the lung tissue, it will usually pass away in a day or two, and the fact that it is felt shows that the lungs need thorough inflation.

Three cases have recently come under our observation where this treatment has proved beneficial.

The first was that of a lady who had been troubled with a dry cough for several months, but whose lungs were apparently sound. In three days she cured herself entirely by deep breathing, and, although a month has gone by since then, there has been no return of the cough.

The second was a gentleman who thought his lungs were failing. Deep breathing gave severe pain as above described, but it soon passed away. A burning sensation was also felt in the lungs at each deep breath, owing to the access of oxygen to irritated lung tissue. The cough decreased in frequency and violence, he has gained in general health, and recovery will probably ensue.

The third was the editor of the *Journal of Health.* He "caught cold," which settled into a severe cough. A dozen inhalations would stop the cough for an hour or two, when it would return and be stopped again in the same way. Two days' treatment drove it away entirely.

Sometimes the first deep breath is interrupted by a cough, but after a trial or two the inclination to cough can be controlled, and after five or six breaths are taken a sense of relief is felt and the desire to cough passes away.

A physician friend informs us that he has seen many cases of supposed consumption speedily cured in this way. At all events, it can do no harm to try it, and benefit may result.—*Hall's Journal of Health.*

NOISY ENGINES.

If every pin in every connection on an engine is round, correctly fitted to its boxes, and properly adjusted to its direction of motion, the action will be silent under any speed. Assuming, now, that the valve motion is noiseless, without clicking trips, or parts striking other parts acting as trips, and that the valves are properly adjusted, there will be nothing audible from these details. The connections—including those of the valve motion—and the main bearings are the chief sources of noisy action, but these may be all right, so far as the eye can see, and the engine may still go about its work complainingly and as though it protested against it. The causes of trouble in such cases are often obscure, and not easily detected, but the causes exist, and if looked for carefully and thought over deeply, may be located. It sometime happens that an overhanging cylinder is weak in the flanges, or not properly erected, so that when the piston is at the back end of the stroke and takes steam, the whole cylinder springs up and down; enough, at all events, to cause a very decided deflection. This may induce pounding, or noise, from a very obvious reason, to-wit: destroying the alignments of parts. Even the bed-plate, massive as it appears, may spring under its load and throw everything out of truth. This is a source of trouble seldom suspected, but it is one that should be looked for. The mere appearance externally, of any part, is no guarantee that it is sufficient for the work demanded of it.

Another cause of trouble in noisy engines is foundation. That which is out of sight is assumed to be all right, for no better reason than that it is invisible; but in made ground, or by reason of bad workmanship, foundations often cause trouble. An engine in a certain shop which ran silently when the steam hammer in the adjoining shop was not at work, thumped violently when the hammer was in use. The cause here was palpable enough, and the same thing often exists in other localities with other machines They need not necessarily be steam hammers to give trouble.

When we reflect that the best foundations extend only a few feet below ground, that they rest wholly upon a comparatively loose, friable substance—the earth—that the said foundations have to resist, year in and year out, the push and pull of thousands of horse-power, it is not at all wonderful that they should yield. Foundations settle and weave back and forth with time. The firmest set post will give eventually to power applied unintermittingly in opposite directions, and so will an engine foundation unless the greatest care is taken in its construction.

Aside from the annoyance it gives, noise is a loss of power, for it is force applied in a wrong direction, and we should use every effort to suppress it.—*Mechanical Engineer.*

SEED CORN TEST.

The Experimental Station at Columbus, Ohio, is doing a good work for farmers. Some of the results of experiments recently made were in substance as follows: For two years much corn used for seed has been of poor quality. Of the 580 samples tested at the station last year, an average of little more than 78 kernels in 100 germinated. Of this number those samples that had been carefully dried and fairly well-kept averaged over 93 per cent., while those that were taken from the crib averaged only a little over 63 per cent. Another fact that should be borne in mind is this: Corn that shows a high percentage of vitality in mid-winter may, unless properly cared for, be unfit for seed when planting time arrives. A sample of corn taken from the crib was tested January 20, and 73 kernels in every 100 germinated. A similar sample was taken from the same crib February 26, when only 30 kernels in 100 were found good. Another sample selected April 24 showed that only 26 in 100 would grow. Last year over 2,840 acres of corn land were planted in Ohio. Allowing four quarts of seed per acre, or one bushel for every eight acres, would give 355,000 bushels of corn used. If only a small percentage of this vast aggregate is poor, the loss is great. In order to prevent loss, the station tests, free of charge, all seeds sent for that purpose. The corn should be selected, one kernel from the middle, one from the butt, and one from the top of each 100 ears; the top, middle and butt kernels kept separate. In other states, where such stations are wanting, farmers may procure such information as will enable them to make their own tests.

WAGES IN WHEAT FLOUR MILLS.

Bradstreet's of March 14, published an exhaustive article on the subject of "Wages," showing the ratio of reduction since 1882. In reply to circulars sent out to flour mill owners, answers were received specifying amount of wages paid as follows:

MINNEAPOLIS, MINN.

	—Wag e per male adult, weekly— July, 1882.	Jan. 1884.	Jan 1885.	Dec. p. c.
Millers.....day	2.50 to 3.00	2.50 to 3.00	2.50 to 3.00	....
Millwrights..day	3.00	3.00	3 00	...
Packers.....day	2.50	2.50	2 50	....
Laborers.....day	1 75	1.75	1.75	....

The rates at Minneapolis are reported to have been the same for thirteen years.

ST. LOUIS, MO.

Head millers.	20.00 to 25.00	20.00 to 25.00	20.00 to 25.00 ....
Engineers...	18.00 to 22,50	18.00 to 22 50	18.00 to 22.50 ....
New hands..	7.50 to 9.00	7.50 to 9.00	7.50 to 9.00 ....
Skilled hands.	1200 to 15.00	12.00 to 15.00	12.00 to 15.00 ....

NEW YORK CITY.

Packers.....day	2.50	2 00	2.00 20
Laborers.....	9 00	9.00	9.00 ....

At New York millers' wages remain unchanged during the period covered, although corresponding with the advance in the art of milling there has been a demand for more skill.

MILWAUKEE, WIS.

Head miller...	25.00	25.00	25.00 ....
Second miller.	15.00	15.00	15.00 ....
Helpers.....	9.00 to 10.50	9.00 to 10.50	9.00 to 10.50 ....
Other laborers	7.50 to 9.00	7.50 to 9.00	7.50 to 9.00 ....

TERRE HAUTE, IND.

Millers.....	12.00	12.00	12.00 ....
Packers.....	10.00	10.00	10.00 ....
Machine tenders	10.00	10.00	10.00 ....
Engineers.....	12 00	12.00	12.00 ....
Laborers.....	7.50	7.50	7.50 ....

The above figures represent the average paid by the leading millers at Terre Haute.

BROOKLYN, N. Y.

First Miller...	23.00 to 25.00	23.00 to 25 00	23.00 to 25.00 ....
Second miller	18.00 to 19.00	18.00 to 19.00	18.00 to 19 00 ....
Skil'd labor's.	12.00 to 14.00	12.00 to 14.00	12.00 to 14.00 ....
Ordinary "	8.00 to 10.00	8.00 to 10.00	8 00 to 10.00 ....
Cartmen.....	13.00	13.00	14.00 ....
Engineers....	18.00 to 20 00	18.00 to 20.00	18.00 to 20.00 ....
Firemen.....	12.00	13.00	14.00 ....

The full returns for Brooklyn milling employees may be reported also as supplementary to the New York City list given above.

ROCHESTER, N. Y.

Warehousemen	10.00	10.00	10.00 ....
Millers.....	12.00	12.00	12.00 ....
Packers.....	10.00	10.00	10.00 ....

Occasionally an extra good man receives $2 more per week than above noted.

EATING.

Hurried eating is a breach of good manners. Americans are proverbially fast eaters. Not the boorish and low lived, but the best people, so-called, are often guilty of this indecency. Dr. Willard Parker, in a recent lecture, gave the following bill of fare seen to be eaten in Albany by a "legislator" in three and a half minutes: Two boiled eggs, two large potatoes, a beefsteak, two goblets of milk, a plate of ham and eggs, a plate of buckwheat cakes and a large cup of coffee. The poor man, however, complained to a friend that he "didn't feel well, and was troubled with dyspepsia!" What sort of legislation can be expected from such billious creatures? Animals do better. The carrier pigeon arrives from its long flight exhausted, refuses food, taking perhaps, a little water, and settles down to rest. Then it will revive and eat. Instinct teaches it that when the nerve power is gone it can't be turned on at the stomach for digestion; the steam is too low. The proprietor of the Astor House restaurant says that, it is strange "to see the way in which these Americans go at their food. A man will start at Wall street, run all the way to the Astor as fast as his legs will carry him, and shovel in his lunch as though his life depended on his getting through in five minutes. Then he will stand around here and talk for an hour or longer without thinking of going back to his office. I have seen them go over and converse for a solid hour with the cashier, after running through their feed like chain lightning."—*Home Science.*

DIET AND FOOD.

I. Foods are scientifically divided into—1.—Water. 2.—Meaty or albuminous substances. 3.—Starches or carbohydrates. 4. Fats. 5.—Mineral matters. 6.—Accessory foods. All of which have their representatives in the body itself. A human being is so "watery" that the corpse of a man weighing 150 pounds, and carefully dried, would come out a shriveled mass of about 50 pounds in weight. The meaty substances are represented by muscle; the starchy by glycogen found in the liver, and by a sugar (inosite) found in the muscles; fat is present, padding angular parts and giving a roundness to the frame; mineral matters abound, especially in the bones and teeth.

II. The composition of the human body is somewhat as follows:

ADULT MAN.

Bones	16 per cent.
Muscles	42 " "
Organs in the chest and abdomen	9 " "
Fat and skin	25 " "
Brain	2 " "

Therefore, supposing a person weighed 150 pounds, 63 pounds would be muscle, 37½ pounds would be skin and fat, 24 pounds would be bone, and three pounds would be brain.

III. More than half the weight of the body is bone and muscle.

IV. The amount of water in food is very large. A beefsteak contains 75 per cent. of water. In buying a pound, only one-fourth of that pound is dry solid meat. Cabbages contain 85 to 90 per cent. of their weight of water, and succulent fruits sometimes more than 90 per cent. Of substances most commonly eaten, rusks or biscuits are the driest, and watermelons the most watery of foods.

V. When water is taken into the system it assists without doubt in the building up of new tissues, in the repair of old. According to this view, it is not merely a dilutent of fluids, it does not simply play an inactive part like a lubricant of machinery, but is in the truest sense a food.

VI. Life cannot be maintained on pure starch, sugar or fat for a long time; on the other hand, a purely meat diet cannot maintain life indefinitely.

VII. Sugar cannot be made the basis of diet but rice can; so that taking complex foods, rice heads the list. Of the three great foods on which, with very little addition, millions of human beings live—viz., rice, bread and potatoes—rice is nearly all assimilated, fine wheaten bread being almost equal to rice, while with potatoes there is nearly 40 per cent. of waste, or substances which pass away without being utilized. So that in point of economy, and considering the relative price of the three, rice stands first.—*American Grocer.*

The following is the latest official news concerning the area, condition and prospects of the winter wheat crop, as supplied by commissioners of agriculture in the various states:

In Virginia the acreage is fully 30 per cent. less than last year. As regards the conditions, advices from the southwest portion of the state report the wheat as being almost destroyed, and generally the prospect for wheat is worse than it has been since 1866. Alternate freezing and thaws, with no snow to protect it, is the principal cause. In Maryland the area is fully 25 per cent. short as compared with last year. There is no serious damage reported. The condition, however, is not flattering, owing to haste in sowing, and the soil not being fully prepared to receive the seed. In Missouri the area sown to wheat is 10 per cent. less than in 1884; but little damage to the plant is reported as yet. In Illinois the acreage is about 15 per cent. short of last year. Some damage, but not serious, was reported in the southern part of the state early in the season. The ground is now covered with snow, and the condition of the grain cannot be determined until the snow disappears. The acreage of Tennessee is fully 20 per cent. less than last year's, and the damage from frost is estimated at 10 per cent. In Kansas the acreage is about 30 per cent. as compared with last year. Some of the largest wheat-growing counties of the state have reduced their area from 25 to 50 per cent., owing principally to the ruling low price of wheat during the past season. The condition of the growing wheat is not up to the standard. Some sections report damage by insects in the fall, and owing to the severity of the winter many predict injury by winter killing. The acreage of Kentucky is from 10 to 15 per cent. less than that of last year, and the winter has been very unfavorable. The area is much less than the last crops in North Carolina, and there is much complaint of winter killing. In New York the area is somewhat less than last season's, and the conditions are favorable, no damage having been reported. Farmers have cut down their acreage about 20 per cent. in West Virginia, and the season so far is unpromising. The fall drought in Georgia extended up to December, and restricted the wheat area. As in the other Southern States, the weather has hurt the young plant. Minnesota farmers have cut down the acreage about 10 per cent., and not more than 2,500,000 acres have been sown. In Northern Dakota not more than one-eighth and in Southern Dakota three-eighths of the crop remain in farmers' hands, and the elevators are kept well cleaned up. If prices remain low the wheat area will not be increased this spring.

THE "IF" IN THE WHEAT CROP OF INDIA.

In his circular Sam. Laughlin, of Chicago, says: Mr. Lecnard the statistical agent of the Indian Government, issued a forecast of the Indian wheat crop for last November, wherein he estimated the acreage of 26,000,000 and the yield 7,000,000 tons, or 244,000,000 bushels, and concluded by saying that "if" they had a good "rainfall in January, they would have a "bumper crop." Now, although this report is over four months old, and was coupled with an "if," which was not realized, as their rainfall was below the average, yet every two-penny, half-penny, newspaper and would-be-authority has been bumping their little heads against that bumper crop ever since, and about twice or three times a week the old, old story is reprinted as if it was something new, until the public has become nauseated with it; but when we look at the facts and see this same bumping authority estimated the crop of last year at 299,000,000 bushels, against 244,000,000 bushels this year, showing a shrinkage of 20 per cent.; and when we consider that out of this crop of 299,000,000 the total exports from India to all countries was only 38,000,000, and of this England received less than one-half, the query to thinking men will naturally be, if England only received only about 17,000,000 bushels last year out of a crop of 299,000,000, how much is she likely to get this year out of a crop of 55,000,000 bushels short.

SPRING-FINDING IN BAVARIA.

The *Allgemeine Zeitung* gives some interesting particulars of remarkable success in indicating the presence of water springs on the part of a man named Beratz, who seems to be a recognized authority in such matters. The scene of his performances was in the Bavarian highlands, at a height of more than 1,300ft. above the level of the sea. The commune of Rothenberg, near Hirschhorn, suffered greatly from want of water, and invited Beratz last autumn to endeavour to find some source of supply for them. He inspected the locality one afternoon in prescence of the public authorities and a reporter of the *Allgemeine Zeitung*, and announced that water was to be found in certain spots at depths which he stated. The first spot was in the lower village, and he gave the likely depth at between 62ft. and 72 ft., adding that the volume of water which the spring would give would be of about the diameter of an inch and a quarter. After incessant labour for four weeks, consisting mainly of rock-blasting, the workmen came on a copious spring of water at a depth of almost 67ft. What he declared about a water source for the upper village was very singular. He pointed to a spot where he said three watercourses lay perpendicularly under one another, and running in parallel courses. The first would be found at a depth of between 21½ft. and 26ft., of about the size of a wheaten straw, and running in the direction from south-east to north-west. The second lay about 42ft. deep, was of about the size of a thick quill, and ran in the same direction. The third, he said, lay at a depth of a about 56ft., running in the same direction, and as large as a man's little finger. The actual results were as follows:—The first watercourse was struck at a depth of 27½ft., running in the direction indicated, and having a diameter of one-fifth of an inch. The workmen came on the second at a depth of 42⅔ft.; it had a diameter of 7-25ths of an inch. The third was found at 62½ft. below the surface, and having a diameter of 3-5ths of an inch—all three running in the direction Beratz had indicated. Unfortunately no hint is given of his method of procedure.

AN AWFUL NIGHT AT SEA.

The *Morning Call*, San Francisco, received the following report of a terrible storm at sea:

"The bark Innerwick, Captain Waters, thirty-one days from Yokohama, has just arrived, and the master reports a very stormy passage. At midnight, on February 24th, in latitude 37° north, longitude 170° 15' east, the wind blowing heavy from the south-southeast with the ship running before it under short sail. At one o'olock in the morning it increased to a living gale with a sky of pitchy blackness. At five o'clock the captain, who was aroused by the mate, went on deck and found the sky changing to a fiery red as if the entire heavens were in conflagration. All at once a large mass of fire appeared over the vessel, completely blinding the spectators, at the time, and as it fell into the sea some fifty yards to the leeward it caused a hissing sound, heard even above the blast, causing the vessel to quiver from stem to stern. Hardly had this disappeared when the mate, clutching the captain's arm, cried: 'My God! what's that?' pointing to a towering mass of foam rapidly approaching the apparently doomed vessel. The noise from the advance of the volume of water is described as deafening. As the bark was struck flat aback, and before there was time to touch a brace, the sails filled, and the roaring white sea could be seen passing away ahead. To increase the horror of the situation another vast sheet of flame ran down the mizzen mast, from whose rigging poured myriads of sparks, and for twenty minutes the strange red of the sky remained. The master, who is an experienced mariner, declares that the awfulness of the sight was beyond description. He considers that the ship had a narow escape from destruction."

ITEMS OF INTEREST.

BUSINESS OF THE PATENT OFFICE.—The annual report of the Commissioner of Patents for 1884 shows aggregate receipts of $1,075,799, and expenditures $970,580. The receipts for 1883 were 1,146,240. There is in the United States Treasury a balance on account of the patent fund of $2,781,695. There were issued during the year 20,297 patents and designs. Of the patents issued 19,013 were to citizens of the United States and 1,284 to citizens of foreign countries. The commissioner again calls attention to the inadequacy of the rooms occupied by his office and of their utter unfitness from a sanitary point of view. He says that several deaths have already occurred from disease contracted in these foul, damp rooms. He asks that the force of examiners be largely increased, and recommends that the salary of the Assistant Commissioner be increased to $4,000 per aunum.

A LADY MACHINIST.—A young lady of 17, studying at one of our large educational institutions, is pursuing a course of study that half a century ago would have marked her as an extraordinary example of independence. She has chosen the mechanic arts, and takes shop practice, studies machinery and its necessary accompaniments of science and mathematics, and in all branches acquits herself to the satisfaction of her teacher. Her object in pursuing a calling considered usually fit only for the masculine intellect, is to enable her to assist her father in his large manufactory at Rochester. At graduation she will be an accomplished machinist, a valuable member of the firm.—*Boston Journal.*

An experienced foreman who has an eye for philosophy says that tools apparently partake of the temper of those who use them. A short-grained man generally has nicked bits; the impetuous man broken ones; the lazy man dull ones; the careless man badly dressed ones; the man of one idea one dress for all kinds of work; the soft man can rarely keep the edge of a tool from turning, while the good-natured and even-tempered man always has the best tools in the shop, and is pestered continually by ill-tempered workmen who come to borrow from him whenever they have a particular piece of work to do. It is quite interesting to note the similarity in the temper of workmen and their tools.

CHLORIDE OF METHYL AS A REMEDY FOR NEURALGIC SCIATICA.—Chloride of methyl, sprayed, produces a degree of cold represented by 23 degrees C. or 94 degrees F. M. Debove has played a jet of this cheap fluid on the skin along the whole length of the limb corresponding to the course of the sciatic nerve and its main branches, effecting almost instantaneous relief to the sufferer from neuralgic sciatica.

BAKING AND REFRIGERATING WATCHES.—A watch, to obtain the highest possible certificate, class A, especially good, from the Kew Observatory, must satisfy the conditions of a very severe ordeal lasting forty-five days, and during that time the hands must not be touched. The watch is hung up and laid down in every conceivable position, and placed in ovens at a temperature of eighty-five degrees, and in refrigerators at forty degrees Fahrenheit. Should the mean variation be more than two seconds in its daily rate during the period of the tests, the watch is either returned to its owner or an inferior certificate is awarded. The Superintendent of Kew Observatory has lately reported the note-worthy fact, as indicating the high degree of excellence to which the science of horology has arrived, that a watch not specially constructed for the purpose, and of moderate price, carried off the highest honor by not showing a mean variation of three quarters of a second in the daily rate, though tested as just stated.

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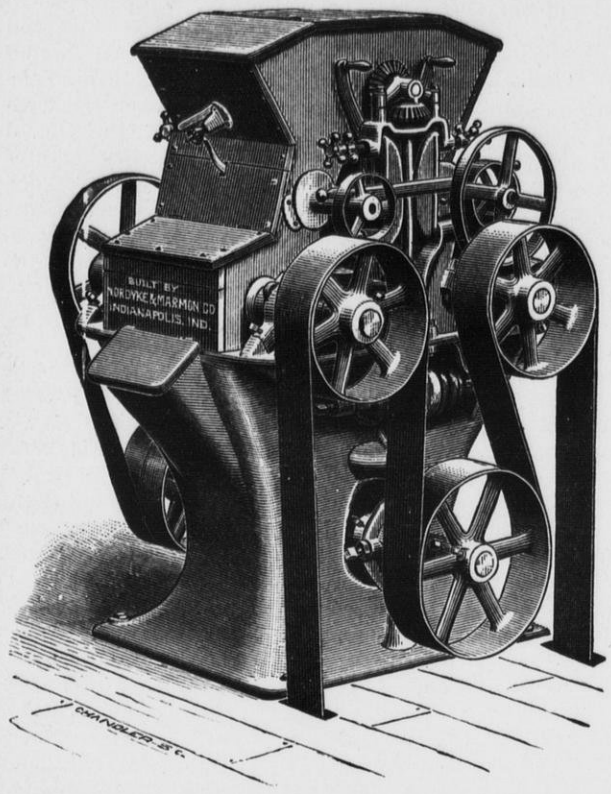

140 BARREL MILL, MEMPHIS, TENN.

MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND. MEMPHIS, TENN., December 16th, 1884.

Gentlemen:—Our mill, as planned and diagrammed by you, has been in steady operation for near 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. Yours truly,

G. W. COWEN & CO.

NORDYKE & MARMON CO., INDIANAPOLIS, IND. OFFICE OF ANCHOR MILLING CO., ST. LOUIS, MO., Oct. 9, 1884.

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. JOHN CRANGLE, V. Prest.

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

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500 BARREL MILL IN MISSOURI.

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MESSRS. NORDYKE & MARMON CO., INDIANAPOLIS, IND. OFFICE OF DAVIS & FAUCETT MILLING CO., ST. JOSEPH, MO., Nov. 28th, 1883.

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., R. H. FAUCETT, Prest.

☞ *Letters on file in our office from a large number of small Roller Millers giving as favorable reports as above. A portion will be published as occasion demands.*

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Office of I. N. DOXSEE, Marsillon, O., March 12, '85.

COCKLE SEPARTOR MFG. CO.

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. Youry 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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Grazing and Farming Lands in Texas for Sale at Low Rates to Actual Settlers.

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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.

A NEW AMERICAN REDUCTION MACHINE.

A NEW ENGINE OF WAR.

A trial of dynamite shells, under the auspices of the Senate Military Committee, took place March 12, on the banks of the Potomac, about half way between Georgetown and Chain Bridge, Washington. The District authorities refused to permit the trials within the corporate limits of Washington, on account of the destructive concussions which were among the results of the preliminary trial a few days before at the Navy Yard. Four shots were fired with six-inch shells, carrying eleven-pound bursting charges of nitro-gelatine, which contains about ninety-five per cent of pure nitro-glycerine. The range was 1,000 yards, and the target was a perpendicular ledge of solid trap rock on the south bank of the river. The first shell struck near the eastern margin of the ledge and exploded by concussion, shattering the face of the rock for the radius of about thirty feet, and carrying away several tons of debris, which were hurled for hundreds of yards up and down the stream. The second shell struck nearly in the center of the ledge, exploding as before. It opened a cavity on the face of the ledge about twenty-five feet in diameter, and excavated a pit or crater about six feet deep. Some of the fragments of rock from this explosion were hurled half a mile, one piece, weighing nearly twelve pounds, being blown clear across the canal, and lodging near a farm-house adjoining the Georgetown reservoir. The other shots were similar in their effects.

A large concourse of people assembled to view the trial, among whom, in addition to several officers of the army and navy, were the military and naval attaches of the German, French and Italian legations, and the Russian minister in person. The trial was regarded as a success in every respect, and was a conclusive proof of the destructive powers of the six-inch shells. The next test in the series will be made in a few days with eight-inch shells carrying thirty-five pound charges of nitro-gelatine. It is possible that, in view of the effects of the six-inch shells carrying only eleven-pound charges, the local authorities may refuse permission to fire thirty-five-pound charges anywhere in the vicinity. If so the next trial will have to be made at Fortress Monroe or Sandy Hook. According to the *Herald's* correspondent, the members of the foreign legations present manifested great interest in the trial, particularly the Russian minister and the German military attache, who took copious notes of the proceedings. Some of the military and naval experts present expressed the opinion that any one of the shells fired would have completely wrecked any unarmed ship afloat, and seriously racked the strongest iron-clad. The safety of the system of firing seems to be assured by the two trials that have been made, the shell leaving the gun in every instance as safely as an ordinary powder charge shell could do.

THE extension of our railway system towards and into Mexico has been one of the most remarkable developments of recent years. A paper, "Along the Rio Grande," by Mr. Sylvester Baxter, which is to appear in the April *Harper's*, will give an entertaining sketch of that country before and during the making of the railway there, and many illustrations by W. L. Metcalf will add to its interest.

NEWS.

P. N. Goetz will build a new mill at Corning, Ark.

S. S. Savage & Co. will build a flour and hominy mill at Ashland, Ky.

James Turnbull is now sole owner of the mill at Detroit, Minn.

Watson & Bradley are building a 100-barrel mill at Tacoma, Oreg.

L. F Shute, of Cheney, W. T., has purchased Geo. Cole's mill at that place.

DeMontmollin & Goodson is the name of a new flour mill firm at Palatka, Fla.

Fugna, Harris & Co. have started up their new roller mill at Trezevant, Tenn.

D. M. Kercher, miller at Dennison City, Man., has moved to British Columbia.

The Camp Spring Mills, St. Louis, is putting in a 400 horse-power engine.

McDonald & McDougald, millers at Gladstone, Man., have dissolved partnership.

The capacity of the Victor Mill at La Crosse will be increased to 550 barrels per day.

The Portage la Prairie (Man.,) Oatmeal Mill has shut down on account of scarcity of water.

An enterprising Dakota farmer, near Fargo managed to sow ten acres of wheat, Feb. 26.

The Todd & Stanley mill furnishing Co., St. Louis, Mo., are out with a new and improved roller-mill.

The Hoople mill, at Sauk Centre, Dak., which was damaged by fire will be immediately put in order for work.

The Ogilvie Milling Co. discontinued grain buying and running their elevator at Meredosia, Man., March 31.

The Minneapolis Union Elevator Co. has commenced the erection of an elevator to have a capacity of 1,500,000 bushels.

A hominy mill is being erected for Daniel Gilkey, of Nashville, Tenn., by Nordyke & Marmon Co., of Indianapolis, Ind.

Piper, Gibbs & Co. are making arrangements to rebuild their mill at Pipersville, Wis. It will be a complete roller mill.

Kirk & Fender of Minneapolis, have recently had orders for scourers and dust collectors from the Argentine Republic, S. A.

The mill owned by C T. Banks & Co., near Wabash, Ind., burned recently. Loss at about $20,000; insurance $10,000. Mill will be rebuilt.

BURNED—March 30th, Walker's mill at Empire, Ill., (loss $3,000), and Weigner & Weigner's mill and elevator near Kahoka, Mo., (loss $7,000); no insurance.

M. P. Bewley, of Fort Worth Texas, has contracted with Nordyke & Marmon Co., Indianapolis, to remodel his mill to the full roller process of 100 barrels capacity.

Jos. Kammerer, of Kammerer, Pa., has contracted with Nordyke & Marmon Co., of Indianapolis. to remodel his mill to the roller system, and to make 50 barrels of flour daily.

David Welshimer, of Greenfield, Ohio, has ordered of Nordyke & Marmon Co., of Indianapolis, the necessary machinery to remodel his buhr mill to a 50-barrels roller mill.

O. P. Logan & Co., of La Fountaine, Ind., are remodeling their buhr mill to the roller system, and are using rolls and machinery made by Nordyke & Marmon Co., of Indianapolis, Ind.

B. P. Hollett & Co., of Arcadia, Ind., are building a combined stone and roller mill of 50 barrels capacity, and their order was placed with Nordyke & Marmon Co., of Indianapolis, Ind.

The City Mill at Anoka, Minn., owned by John Dunn & Co., burned March 4. Loss on mill and stock about $17,000. Insurance $10,000. The mill was a 100-barrel one, and driven by steam power. It will be rebuilt at once.

Fred. Heitman, of Atlantic, Iowa, and Kuhn & Roush, of Manning, have both contracted with Nordyke & Marmon Co., of Indianapolis, for the necessarry machinery to remodel their mill to the roller system.

Jacob H. Landes, of Yerkes, Pa., has recently started up his mill on the roller system, using a Gilbert combined four-break machine, and the necessary smooth rolls. It has a capacity of 60 barrels, and is doing A1 work.

McCall & Clark, of Montrose, Col., who built a combined stone and roller mill a few years ago, are now changing it to the full roller process, using machinery made by Nordyke & Marmon Co., of Indianapolis, Ind.

J. W. & A. W. Smith, of Clokey, Penn. (near Pittsburg), are building a 50-barrels roller mill, using Nordyke & Marmon's machinery. The motive power will be an automatic engine, and the machinery will be located by John Call.

J. & B. Stevenson, of Glasgow, Scotland, will immediately erect in London, England, at Battersea, one of the largest bakeries in the U. K. The Stevensons now consume more American patents than any other firm in Glasgow. The new bakery will be built on the most modern principles, and will consume annually a great quantity of American flour.

The Merrill & Houston Iron Works, Limited, of Beloit, Wis., have been reorganized with the following officers: President, J. D. Rexford, of Janesville; F. H. Starkweather, Secretary and Treasurer, Beloit. The works will now, probably, start up soon.

Close upon the completion of the 75-barrels roller mill of Todd, Hosford & McDaniels, at Eugene, Ind., comes the news of another 75-barrels roller mill, to be built in the same town by Bowers & Lash. Both contracts are in possession of Nordyke & Marmon Co., of Indianapolis, Ind.

A party with means is wanted to go to Raymond, Rice Co., Kas., to build a water power flour mill. The right of way for head and tail race will be given, together with land for mill house. Head race will be 1¾ mile long, tail race twenty rods. Head twelve feet of water from Arkansas River. No dam required. Apply to A. Willard, Raymond, Kas.

The 200-barrels roller mill just built for Governor Eaton, of Eaton, Col., by Nordyke & Marmon Co., of Indianapolis, was recently started up, with perfect success, and will at once convert 250,000 bushels of wheat into flour for the local trade, which has been collected during the construction of the mill. The Governor's land possessions will raise sufficient wheat to keep the mill running.

General Bidwell, of Chico, Cal., who has just contracted with Nordyke & Marmon Co., of Indianapolis, Ind., for a 200-barrels roller mill, operates a farm containing 23,000 acres, upon which is raised wheat, barley, corn, oranges, lemons, peaches, raisins, appricots, olives, etc. He was also Senator from his State at Washington. Prior to the discovery of gold he was clerk in the employ of Sutter, upon whose land gold was first discovered in 1849. Senator Bidwell purchased his present possessions of an old Spaniard, giving in pay therefor a broncho and saddle.

THE LARGE RAIL-MILL ENGINE.—Messrs. Edward P. Allis & Co., of Milwaukee, Wis., have in course of construction a 2,000-horse-power automatic engine for the Joliet Steel Company. It is to be of the Reynolds pattern, but of special design, and adapted for driving the finishing rolls in the steel-rail mill. The cylinder is 40 inches in diameter, with 5 feet stroke, and the enigne is intended to run 110 revolutions per minute, giving the extraordinary piston speed of 1,100 feet. The design and construction will be of the most substantial character, the engine weighing complete over 100 tons. The engine will occupy a space of 40 x 18 feet, including that occupied by the fly-wheel and outer pillow block; the massive trunk-bed is so disposed that the working strains are thrown into the line of greatest resistance, which is, of course, a very important feature in an engine liable to vary its power from the mere friction of the roll-train to the full 2,000-horse-power. The induction and cut-off valves are of the piston type and of peculiar design. They are very free and effective in admission, cut-off, and release of steam, and are so devised that the range of cut-off will extend from the beginning to about ⅞ of the stroke; the automatic regulation being sufficiently positive and prompt to adjust the cut-off to any point in the range within a single revolution of the engine. The piston-rods will be two in number, of steel, and each 5 inches in diameter; the connecting-rod will be 14 feet between centers; and the crank-pin, of steel, will be 10x10 inches. The main shaft is to be of hammered wrought iron, made from selected scrap, 14 feet long and 20 inches in diameter, and the main journals are to be 17 inches in diameter and 36 inches long. The outer end of the main shaft will couple direct to the roll train. The fly-wheel will be 22 feet in diameter and weigh 50 tons, and when this wheel is brought up to a speed of 110 revolutions per minute, the resistance required to bring it to rest with anything like suddenness is enormous. The foundations of the engine will be very deep and massive, the engine being secured in place by twenty anchor bolts 3 inches in diameter. When the monster is set in position and put down to hard work it will be one of the triumphs of mechanical skill.

THE CASE MANUFACTURING CO., of Columbus, O., are doing a good business so far this year. Among the recent orders they have received are the following: Rolls for Freeman Miling Co., Mansfield, Mo.; 2 pairs rolls for W.H. Hohe, Parsons, Ks.; 8 pairs rolls for S. T. DeBuss & Co , Dawn, O., rolls ordered by W. T. Pyne of Louisville, Ky., for Rice, Cullen & Givers, Providence, Ky.: automatic feeders for Crescent Milling Co., Denver, Col.; 4 sets rolls and 2 double purifiers for London, England; rolls for E. Light, Avon, N. Y.; 2 sets rolls for B. Kno.l Hawley, Minn.; 3 feeders for Corl & Black, Cant n, O.; for a complete outfit of milling machinery, including 12 sets Case rolls, for Hawley Bros., Farmland, Ind.; 2 sets rolls and other machinery for Nelson Bros., Morencie, Mich,; a Case improved reel for Mitchell & Fry, Oak Harlem, Mich.; rolls, purifier and bolting reels for Albert Fiske, Olivesburg, O.; 2 sets rolls with feeders for A. E. Atherton, Grand Blanc, Mich.; 2 sets rolls, etc., for Bathman, Fry & Co., Benton, O.; for a complete outfit of rolls and machinery for Lane, Fuget & Lane, Tower Hill, Ill,; for automatic feeders for Kerfoot Bros., mill-furnishers, DesMoines, Ia.; for for rolls, scalpers, reels etc., for Levi Bishop, North Webster, Ind.; rolls for Lester & Williams, Lebanon, Tenn.; for 10 sets rolls and a complete outfit for the mill of E. A. Pomeroy & Son, Jonesville, Mich.: for 3 sets rolls, etc., for H. & P. Muntz, Conway Springs, Mich.; rolls ordered by Sinker, Davis & Co., Indianapolis, Ind.; a complete outfit of rolls and machinery for a 110 bar els mill for B. F. Hambilton & Co., Keokuk, Iowa; for 2 sets rolls, Judson & Hipple, Waterford. Pa.; E. Pearce & Co., Shreive, O., and W. J. Lumkins' of Owensboro', have started up their millsbuilt on the Case system with entirely satisfactory results; J. W. Chatburn & Co., of Independence, Mo., have recently given another order for a complete roller mill and machinery on the Case system. This is the second line of machinery ordered by the same firm, from the Case Co., in the last six months; H. C. Smith & Co., Lawrence, Ks., two pairs rolls etc , Shelton & Jordan, Triune, Tenn., 10 pairs rolls and machinery for complete mill on the Case system; J. C. Scott & Co., New Waterford, O., a No. 1 double Case purifier; Frank Gardner, Moscow, Mo.. 2 sets Case rolls with patent feed; L. Strong & Co., Omaha, Neb., have ordered a full line of machinery for a complete mill on the Case system, for Humphrey & Bird, Minden, Neb.; J. E. Bisere, Millington, Md., has ordered machinery for a complete mill on the Case system; T. J. Morris, Bowling Green, Ky., have ordered 2 sets Case rolls with patent feeder; rolls etc., have been ordered by H. C. Williams, Ithaca, N. Y., for B. F. Starr, Baltimore, Md., etc. Business is very brisk at the Case Works, Columbus, O., and domestic and foreign orders come in lively.

Messrs. Ganz & Co., of Budapest, Austria-Hungary, will build a complete roller mill in Alexandria, Egypt, for the Egyptian Joint Stock Mill Co.

The Geo. T. Smith Middlings Purifier Co. Declines any Award

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A CARD TO THE MILLING PUBLIC:

From the manner in which awards have been managed here thus far, and from all information we are able to obtain, we are satisfied that practical men will not be selected for jurors, and that any mention of our Centrifugal Reel or Purifier we might receive at this Exposition would be of no importance to us or significance to intelligent millers. We therefore announce in advance of the selection of any jurors for the class in which our machines are placed that our goods will remain here for EXHIBITION ONLY.

Promising all visitors a cordial welcome, we remain, as ever,

Sincerely Yours,

GEO. T. SMITH MIDDLINGS PURIFIER CO.,

Dated March 20th, '85, at space F. F. & G. 5 and 6, Main Building Exposition, New Orleans, La.

Jackson, Mich.

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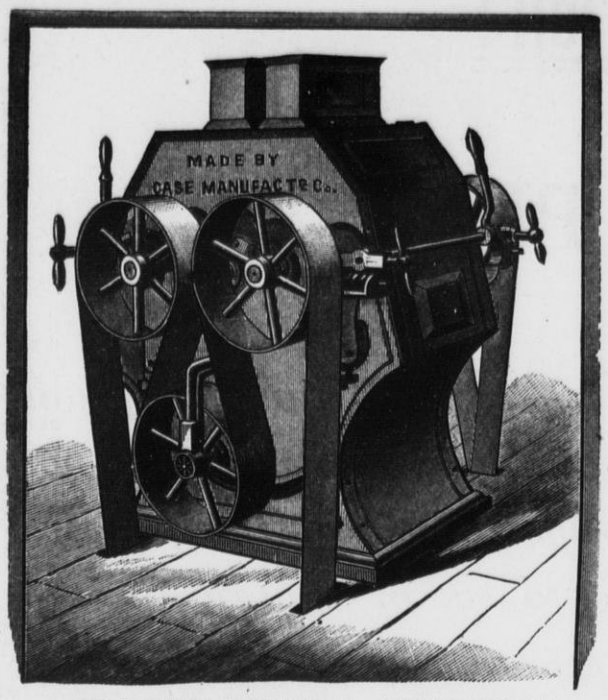

9X18 FOUR ROLL MILL—"BISMARCK."

ASHTABULA, OHIO, JANUARY 12th, '85.

CASE MANUFACTURING CO., Columbus, Ohio.

GENTLEMEN:—It is now over one year since we accepted our mill from you and we have had ample time to make careful tests and comparisons of the products of other mills, and we feel that we owe to you at least an acknowledgment of our opinion as to the merits of your system of milling. We are free to confess that we do not believe that there are any parties building mills to-day that do or can build better mills than you do. Our convictions are made up from the stubborn facts that we can and do get 30c. per bbl. more for our flour in many places than many of the leading mills do for theirs.

One leading house in New York writes us as follows: "Your samples in and carefully tested and we are frank to confess that we do not see how the flour can be improved." We can give you many instances of approval of our flour but we think above is enough inasmuch as it is unsolicited by you.

Yours Very Truly,

FISK & SILLIMAN.

We can do as well for others as we have for F. & S. Correspondence solicited.

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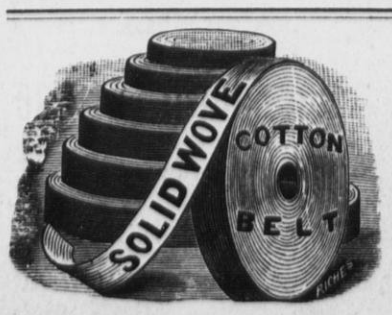

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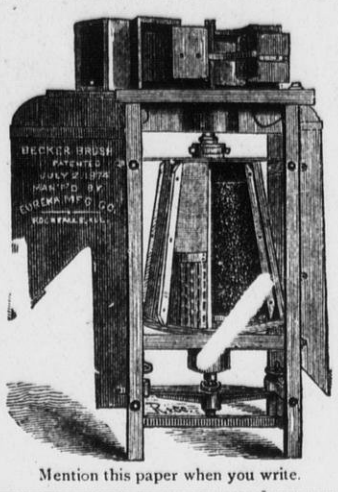

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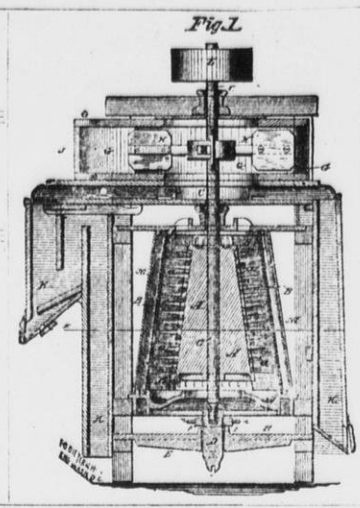

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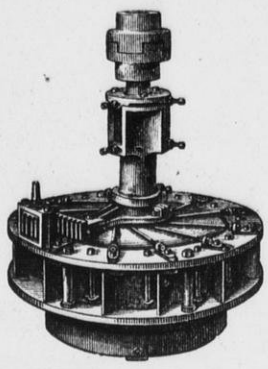

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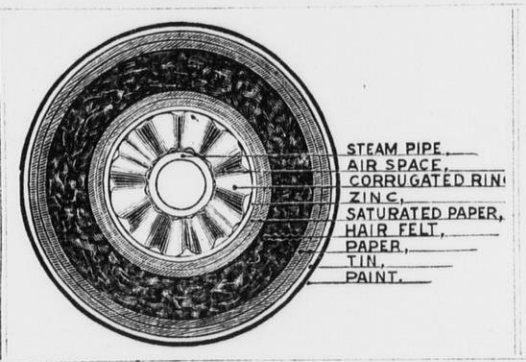

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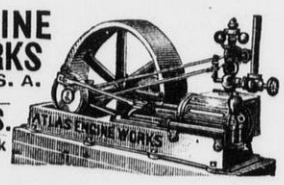

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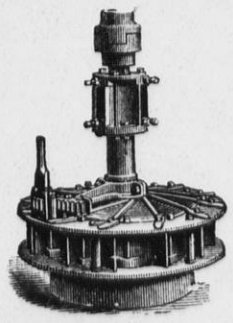

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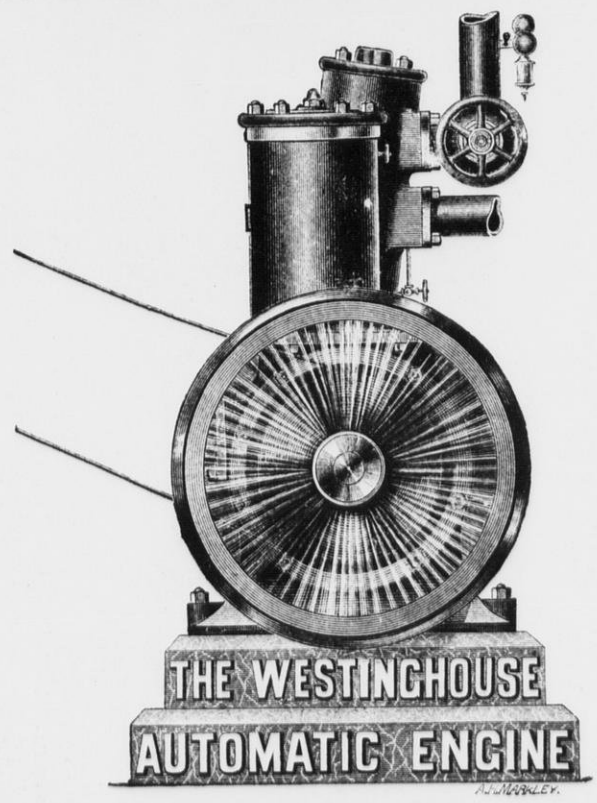

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