

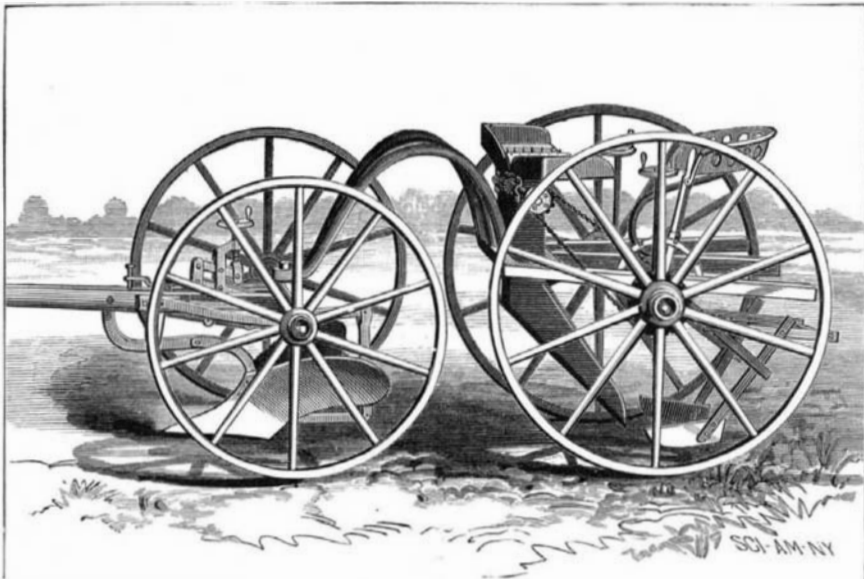
CANE PLANTING MACHINE.

The accompanying engraving shows a cane planting machine recently patented by Mr. C. C. Coleman, of Honolulu, Hawaiian Islands. The machine is constructed with a double mouldboard plow to open a furrow to receive the seed. The beam of the plow is made short and curved forward, and is pivoted to the rear end of a lever, the forward end of which is pivoted to the rear part of the tongue, to support the draught strain upon the plow. A series of levers connected with the plow are operated by a hand screw, by the turning of which the plow can be adjusted to enter the ground to any desired depth, and can be raised above the ground for convenience in turning around and passing from place to place. To the center of the forward axle is pivoted the end of the reach, which is made in three branches, which are arched to give the wheels a free movement in turning; the rear ends are secured to a frame rigidly attached to the axle. To the forward middle part of this frame is attached a casing, to the front and rear sides of which are journaled two rollers placed a little distance from each other, and parallel with the length of the machine. In each roller are rows of spikes of sufficient length to take a piece of cane from the lower edge of the inclined feed table, carry it over, and drop it into the casing. To the lower edges of the tables are secured guide bars, which are curved to fit against the rollers to prevent the pieces of cane from dropping down at the outer sides of the rollers, while allowing them to come so close to the rollers as to be

taken up successively by the spikes. To the lower part of the casing is hinged a tapered spout, the lower end of which follows along the furrow and deposits the cane. The pieces may be placed parallel with the furrow, or crosswise, as may be desired. The casing and spout are divided into two compartments by a partition, so that the pieces from the rollers will pass separately to the ground. Beveled gear wheels on the forward journals of the rollers mesh into gear wheels on a shaft, which is revolved by an endless chain passing around a chain wheel on the hub of one of the rear wheels; the seed dropping rollers are thus operated by the advance of the machine. The pieces are covered by covering plates attached to standards, the pitch of which can be readily adjusted; these plates can also be adjusted at a greater or less distance apart. The plates are held securely in any position by means of a lever projecting upward across an

A Protracted Lawsuit.

The famous chancery suits of England, of which everybody has read, sink into insignificance compared with the length of time a suit has been progressing in Northern Europe. The Supreme Court of the Duchy of Brunswick has just given final judgment in a suit of, perhaps, unprecedented duration. It was an ejectment suit by Count Stolberg against the Brunswick Government for possession of the county of Blankenburg and its domains, the market value of



COLEMAN'S CANE PLANTING MACHINE.

which was estimated at many hundreds of thousands of pounds. The original suit was commenced in the year 1604 in the Imperial Chamber of Wetzlar, which was the Supreme Court for settling disputes between sovereign princes of the German Empire. It dragged on through various stages till 1649, when judgment was given, and then it fell into abeyance. Subsequently the county, with its appanages, came into the possession of the Dukes of Brunswick. The object of the late proceedings was to revive this suit, for the purpose of declaring Count Stolberg entitled to the title and domains. The court decided finally against his claim.

IMPERIAL DOM PEDRO II. BRIDGE.

The engraving we give illustrates a bridge, in the design and construction of which are features of an essentially

ing is from the *Engineer*. The inception of the work is due to Mr. Hugh Wilson, C. E., and is being carried out under the approval of Mr. A. L. Stride, M. Inst. C. E., the consulting engineer of the Brazilian Imperial Bahia Central Railway Company.

Comparative Results of Homœopathic and Allopathic Treatment of the Insane.

In an editorial published last month, we gave the results of treatment in the Middletown (N. Y.) Homœopathic Asylum for the Insane as compared with the results in the three similar asylums of the State of New York under the charge of allopathic physicians. In calculating the relative percentages, we inadvertently used the wrong column of figures from the report of the State Board of Charities, and consequently made the percentage of recoveries seem much lower than it really is. The recoveries are calculated from the number of *admissions*—the only correct method—and the deaths from the total number of inmates treated. The correct statement is as follows:

Three allopathic asylums: Recoveries, 25.37 per cent; deaths, 6.49 per cent.

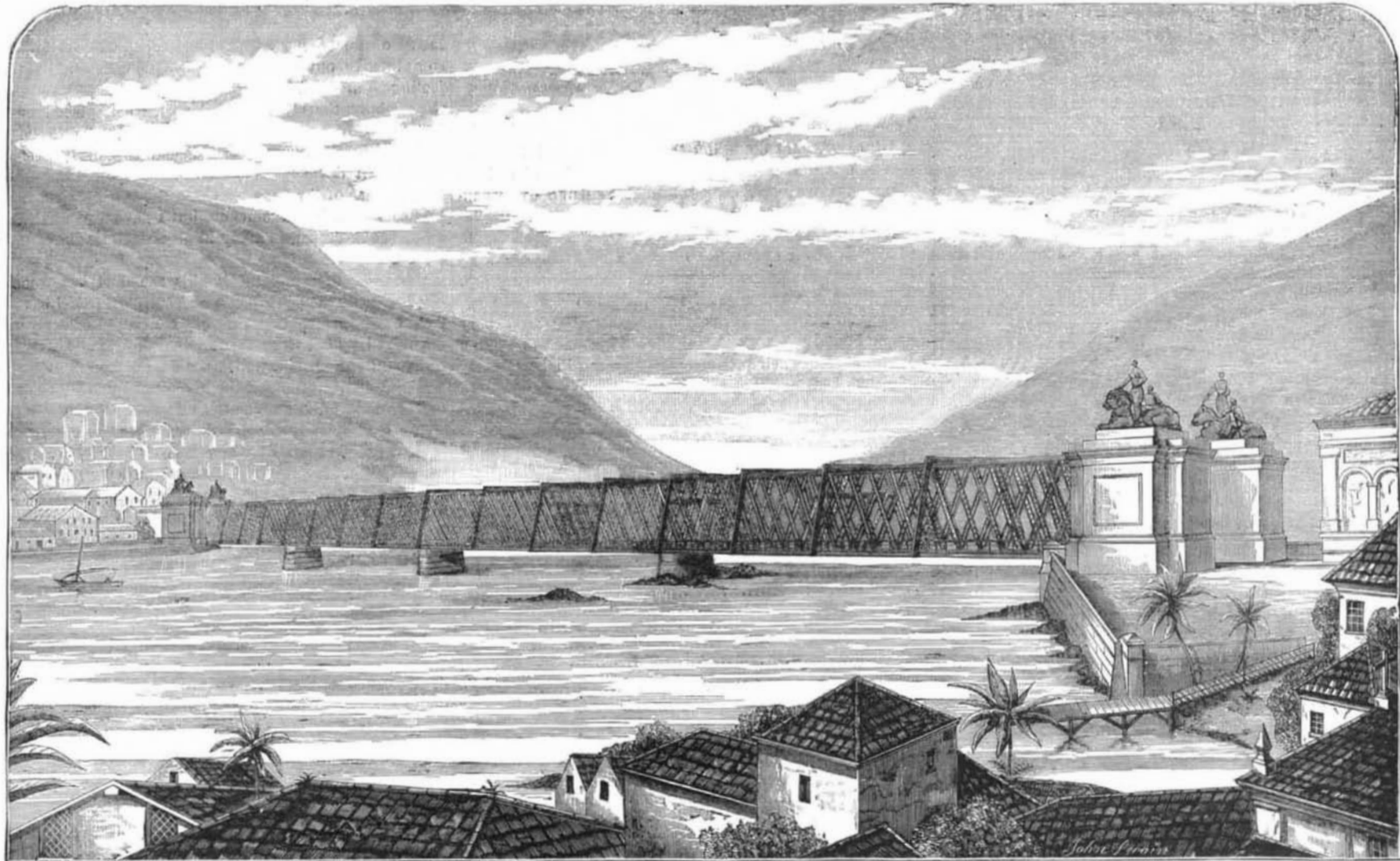
One homœopathic asylum: Recoveries, 40.59 per cent; deaths, 4.39 per cent.

In other words, homœopathy cures forty patients in each hundred, while allopathy, under similar influences and with equal facilities, and treating similar cases, cures twenty-five in each hundred. While homœopathy loses by death 4.4 per cent, allopathy loses 6.5 per cent. As there were 946 patients

admitted to the allopathic asylums during the year, it follows that about 142 unfortunates either died or were permitted to lapse into hopeless, chronic insanity who, under homœopathic treatment, might have been restored to health, and returned to their friends and to usefulness. Had the relative percentages of recoveries been reversed, the State Board of Charities would have recommended the immediate discontinuance of the homœopathic institution.—*Hahnemannian*.

Cremation in Italy.

The municipal council of Florence, in its spring session, May 9, 1884, at the request of a committee for cremation, has allowed 200 square meters to be occupied in the Trignano Cemetery for that purpose. The Florentines seem to



IMPERIAL DOM PEDRO II. BRIDGE.

arched catch bar. To the ends of the sliding shaft that carries the lever and covering plates are fastened the ends of a chain passing around wheels mounted on vertical shafts held in bearings on the axle. By turning these wheels the shaft may be moved longitudinally, thereby giving a lateral movement to the coverers, to adjust them in relation to the furrow.

Further particulars regarding the construction and working of this machine, or the terms upon which it may be manufactured, can be had by addressing the inventor.

practical character. This structure was designed by Mr. James Cleminson, Mem. Inst. C. E., for the threefold purpose of carrying the Brazilian Imperial Central Bahia Railway, to form a public highway, and lastly a foot bridge across the Paraguassa River, between the cities of Cachocira and Sao Felix, Brazil. The principle that has been observed by Mr. Cleminson in designing and carrying out this work is the elimination of all skilled labor, by utilizing the material just in the condition that it leaves the rolling mill, and its treatment throughout by machinery only. Our engrav-

look upon this method of disposing of their mortal remains with some favor.

Trial of a Car Coupler.

At the car shops of John Wood, Jr., Conshohocken, Pa., some of the Reading cars have lately been fitted with the self-acting coupler invented by G. W. Curtis—patent of November 9, 1880. The invention has proved on practical trials to be eminently successful.

Wood Pavements.

As containing data and deductions of general interest, we publish a letter written recently by Joseph P. Card, of St. Louis, to O. Chanute, C.E. While the fact that the writer is the president of a wood preserving company should be given due weight, it should be also remembered that he is an expert in this line of practice, and has diligently studied all the bearings of the case from a business as well as a constructive standpoint:

"In the first place, "says Mr. Joseph P. Card," it is admitted by all, that it is of little use to lay any pavement without a good and substantial foundation, and none of the substances used requires this more than wood.

"Such being the case, a substantial concrete foundation is first laid, and it should cost the same, whether granite, wood, or other material be placed upon it; consequently the only thing to be considered is the cost of the wearing surface, the lasting qualities of same, and its desirability as a pavement when completed.

"In my opinion, the trouble with wood pavements in this country has been: First, the lack of a proper foundation. Second, the people generally have expected a wood pavement, which should have cost as usually laid (with a board foundation) \$1.35 per square yard, to last as long as a granite pavement (with a concrete foundation) that cost \$4.50 or more per yard.

"Now we will take Broadway, New York, for instance, which is 44 feet wide, with a concrete foundation, ready to receive either granite or wood blocks, and suppose granite blocks are laid at a cost of say \$3.60 per square yard, which would be equivalent to \$8.80 per front foot for the abutting property.

"On the other hand, a preserved wood block pavement is laid with blocks say 3½ inches by 5 inches deep, leaving a space of ¼ to ⅜ of an inch between the rows, to be filled with suitable material, at a cost of \$1.62 per square yard, or \$3.96 per front foot.

"Now what would be the result? The granite pavement would probably last 10 to 15 years with slight repairs, and the wood pavement 5 to 6; but for comparison we will suppose the granite to last 15 years and the wood 5.

"The granite costing \$8.80 per front foot, the wood \$3.96 for 5 years or \$11.88 for 15 years (allowing two renewals), and deducting 79 cents difference in interest at 6 per cent, would make wood cost for this period of time \$11.09 per front foot, or a difference of \$2.29 per front foot, equal to 15 cents per front foot per year more than granite, which is virtually nothing.

"Now, in my opinion, the wood pavement would be more likely to last over 5 years than the granite to last 15; but if I am incorrect, who is there living or doing business on a street like Broadway, where property is worth thousands per front foot, that would not willingly pay the slight difference, or many times the difference, to get rid of the incessant noise and confusion incident to a stone pavement?"

"I think the thoroughfares should be paved with wood, and the by-streets with granite or other stone, as it would last indefinitely.

"My reason for using a 5 inch wooden block is, that when the surface of the street becomes worn down to the extent of 2 to 2½ inches, it becomes so irregular that the remainder of the blocks, whether 2½ or 5 inches, are so softened with moisture, which accumulates in the depressions from rainfall or by sprinkling, that they soon go to pieces.

Wood on end, if it could be kept dry, would outwear granite, as shown by Col. Flad's tests, made at our water works here, consequently the drier the wearing surface is kept the less wear.

"Fully creosoted wood blocks under heavy traffic wear rapidly, as shown on the Brooklyn bridge, for the reason that the oil keeps the fiber soft.

"There was more wear on the St. Louis bridge, which is paved with wood, in the two months that the bridge was salted, to remove slush and ice, than in the balance of the year.

"In other words, the principal wear of any wood pavement occurs during wet weather, and the aim should be to keep the wearing surface of the wood as dry and smooth as possible.

"With a good concrete foundation once down, the wooden blocks could be renewed, when necessary, during night time, with little or no inconvenience to travel.

"From a sanitary point of view, the concrete foundation would prevent what most people seem to dread, the leaking through of impurities to the soil beneath, while the treated blocks would disinfect any portion that might enter the same."

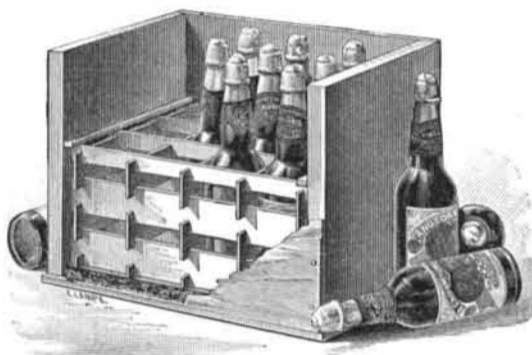
Ivy Lawns.

Ivy lawns are known to but few among the many who are interested in gardening economy. They consist, as the name implies, of ivy only, and they offer some peculiar advantages in cases where grass lawns are apt to occasion more trouble than they are worth. According to the *Farmers' Gazette* (Dublin), an ivy lawn may be well made in one season, and if the primary operation of planting be properly performed the lawn will make itself; it will want no cutting, no sweeping, no watering, no protection from the birds that eat the grass seeds to-day and to-morrow scratch up the tender plants, as though it was their mission to make grass lawns impossible. And when made, being, as it were, self-made, an ivy lawn will take care of itself for any number of years; but if in need of repair or trimming, the knife,

the shears, or the spade may be used with unskillful hands, and with the least imaginable cost of time, for it is not an easy thing to kill, or even to seriously injure, a lawn consisting of ivy solely. Such lawns are unfit for games, and indeed should not be trodden on. They will not therefore supersede grass in a country garden, which perhaps is a matter for gratulation; but they will give us the most delightful breadth of verdure in thousands of places where grass is more plague than profit, and, at the very best, tends rather to disgrace than adorn the position.

PACKING BOX FOR BOTTLES.

The compartment crate or packing structure is formed of thin strips of wood, or veneer, arranged in longitudinal and transverse rows successively one upon the other, the strips in each row being notched on their edges to interlock with those immediately above or below, and spaces being left between the rows for lightness. The ends of the strips project to leave clearance spaces between the outer strips and sides of the box. The compartments thus formed are not made of the full depth of the box, but are sufficient to inclose the bodies of the bottles, this being all that is necessary to give the required protection. This crate rests upon hay, straw, or other soft and yielding material covered by a piece of pasteboard for the bottoms of the bottles to cushion upon. The crate is kept down to its place upon the cushions by cleats nailed on the ends of the box, so that there is no tendency of the material used for the cushion to settle at

**SCHOENTHALER'S PACKING BOX FOR BOTTLES.**

either end while the box is being transported from the box factory to the place of use. These packing boxes have given the greatest satisfaction during their use of over a year by some of the principal bottlers of St. Louis.

Additional information may be obtained from the inventor and manufacturer, Mr. J. C. Schoenthaler, of 1024 N. Main Street, St. Louis, Mo.

Renewal of Brain Cells.

According to the novel computation of a German histologist, who has been calculating the aggregate cell forces of the human brain, the cerebral mass is composed of at least 300,000,000 of nerve cells, each an independent body, organization, and microscopic brain, so far as concerns its vital relations, but subordinated to a higher purpose in relation to the function of the organ; each living a separate life individually, though socially subject to a higher law of function. The life term of a nerve cell he estimates to be about sixty days; so that 5,000,000 die every day, about 200,000 every hour, and nearly 3,500 every minute, to be succeeded by an equal number of their progeny; while once in every sixty days a man has a totally new brain.

The Cost of Making Steel Rails.

A recent issue of the *Pittsburg Penny Press* contains an interesting article on the cost of steel rails. The actual cost of producing a ton of steel rails in Pittsburg is placed at \$26.83, as shown by the following itemized statement:

COST OF PIG METAL.	
1½ tons of coke, at \$2.....	\$2.20
Limestone.....	.50
Ore, scale, etc.....	10.00
Labor, including repairs.....	1.75
General expenses.....	.38
Interest.....	.35
Cost of a ton of metal.....	\$15.18
COST OF INGOTS.	
1½ tons of metal direct at \$15.18.....	\$18.12
Refractories.....	.20
Lubricants.....	.02
Repairs.....	.24
General repairs.....	.17
Labor.....	1.13
General expenses.....	.09
Spiegel.....	2.31
Interest.....	.20
Cost of a ton of ingots.....	\$23.48
COST OF RAILS.	
105 tons ingots direct with initial heat at \$23.48 per ton.....	\$23.62
Labor and office expenses.....	1.90
Repairs entire.....	.49
Steam (natural gas).....	.10
General expenses.....	.35
Interest.....	.22
Tools, files, etc.....	.15
Cost of a gross ton of steel rails.....	\$26.83

The *Press* also states that the cost of making a ton of steel rails in England at present is \$20.17.

Sulphite of Soda Intensifier.

Scolik, of Vienna, has recently experimented extensively with the above intensifier, and in a late number of the *Photographische Correspondenz* recommends the following formula:

Solution No. 1.

Bichloride mercury.....	1 oz. 437 grs.
Bromide potassium.....	1 oz. 437 grs.
Water.....	.50 oz.

The above may be diluted four times its volume if desired, in order that the action may be gradual and less energetic. The fixed and well washed negative is allowed to remain in No. 1 until the film becomes well whitened. If a small degree of intensification is desired, it should be left in but a short time.

The plate is next slightly rinsed off (a thorough washing not being required at this point), and immersed in

Solution No. 2.

Saturated solution sulphite soda.....	5 oz.
Water.....	.50 oz.

The darkening action will be observed to take place gradually, as in the case when ammonia is used, and will impart a rich brown-black color to the negative, which should be well washed; negatives thus intensified are believed to be permanent. Dr. Eder describes the following as the chemical reaction which takes place. The whitened negative contains mercurous chloride (calomel), and this is reduced to the metallic state by the sodium sulphite, just as appears to be the case when cyanide of potassium is used; thus the method now described may be regarded as analogous with Monckhoven's argento-cyanide of potassium method. Mercuric chloride is not reduced in the cold by alkaline sulphites, because stable double salts are formed; still, at a boiling temperature, reduction sets in, the mercurous chloride being first formed, and then the metallic mercury.

The above fact explains why it is unnecessary to wash away all traces of mercuric chloride before treating with sulphite of sodium.

Fires from Belting.

Herr Boher, illumination inspector of Dresden, has been making some experiments to determine what part is played by electricity in causing explosions of flour dust in mills. His investigations have been conducted at the Royal Court Theater, where the powerful dynamos for the electric lights are driven by steam power.

"Here," the inspector says, "the electricity from the belting is so intense that more could scarcely be obtained in the best electric machines. Leyden jars became charged by this means in a few seconds, so that on being discharged sparks leap one and three-fifths inches. Any person standing on an insulator and placing the hand within four to six inches of the moving belts is quickly charged with electricity, so as to give out long sparks. Geissler tubes, having projecting pointed wire at one end, and metallic connection with the earth at the other end, glowed, when placed near the belts, with beautifully colored lights. In short, every experiment possible with electric machines can be performed by this belt developed electricity. At first I thought that the presence of the dynamo electric machines had a great influence on this phenomenon, but I have noticed the same, more or less shown, in many kinds of factories having steam power.

"In many flour and meal mills the dust has become ignited without the cause having been discovered. I have now, from experiments, become firmly convinced that electricity developed by belts can cause such disaster. In most factories, other than flour mills, the quantity of metal present, and the arrangement of the iron framed machines, is such that a connection among them is established sufficient to conduct safely away the electricity. It is, however, different in flour mills, especially where French burr stones are used, which are made of separate pieces bound together by thick iron bands. The latter are not connected with one another, but isolated by the non-conducting stone. Rims, therefore, which are next to the driving pulleys and belts (generally located just below stones when cogwheels are not used, and pulleys almost equal in diameter to the stones) become surcharged with positive electricity—as shown in the Leyden jar, for instance; the next nearest rim or rims will, by induction, develop negative electricity. These opposite forms of force having arrived at a dangerous degree of tension, the leaping of an intense spark from one stone band to another could ignite the excessively inflammable flour dust. To guard against this danger, it is simply needful to collect the iron spindles of the stones together by a thick wire, a metallic bar being at the same time located nearly touching both stone rim and driving pulley. In all other industrial works the precaution would be advisable that no isolated iron work should be near pulleys and belting when combustible materials are also in the immediate neighborhood."

[The remedy above suggested, we fear, is of little avail. The connection of the spindles as proposed will not prevent the generation of electric sparks. A better prevention is to keep the atmosphere of the apartments where the belts run thoroughly damp.—Ed. S. A.]

At some of the theaters and opera houses in Europe water curtains are used as a safeguard against fire. Between the acts a wide, tenuous sheet of water descends, separating the stage from the auditorium. Its efficiency was recently proved at the opera house at Munich, Bavaria, when by its means a fire was checked instantly.