

# INDUSTRY AND MECHANICS

## USE OF CONCRETE PIPING.

Material Is Now Being Used for Buildings of All Kinds, Large and Small.

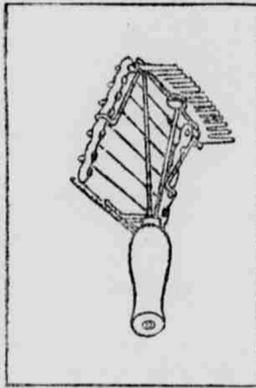
While iron and steel men insist that this is an age of steel, and electrical engineers hold it is the electrical age, concrete builders maintain that it is also the concrete age, and everyone will agree that while concrete has been utilized for centuries past, it has never been so universally employed as at present. Buildings of all kinds, large and small, vessels, railroad ties, pavements, mine shafts, walls, breakwaters, piers, piles, water and sewer pipe, tanks and wells, as well as many other kinds of construction are now being made of concrete.

At Waukegan, Ill., a line of 5,000 feet of such pipe is being laid. The diameter of the pipe is 48 inches. More than 1,000 feet of pipe 66 inches in diameter has been laid at Atlantic City, and in still another city a line of pipe 72 inches in diameter has been completed for a distance of 4,000 feet. Hydro-electric power plants are also using reinforced concrete pipe.

## ART OF CURRYCOMBING HORSE

Newly Invented Device Has Cleaning Attachment, Keeping Comb Free of Dirt.

The process of currycombing a horse is an art, and one not to be

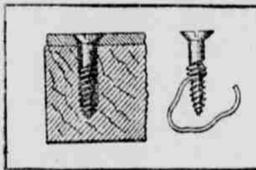


Strike Wires Against Stall.

learned at first attempt; but even a novice, equipped with the currycomb designed by an Ohio man will find the job easier than an expert will find it who uses the old-style comb. This new device bases its advantage in the fact that it has a cleaning attachment by means of which the comb may be kept clear of dirt as the work goes on. This consists of a hammer head so adjusted at the edge of the comb that a slight jar sets it in vibration and the particles of dirt are shaken out. Across the back of the instrument are wires so bent as to engage the hammer head and hold it loosely in position. The holder needs only to strike the wires against the side of a stall and the hammer head is set into vibration. Unless a currycomb is kept clean it cannot be used effectively, as the corrugations become clogged and it passes over the horse's hide without any result.

## REMEDY FOR LOOSE SCREWS.

A convenient method of making a loose screw hold is illustrated here-with. Take a soft piece of copper wire and wind it around the threads



A Remedy for Loose Wood Screws.

of the screw as shown, thus in effect increasing the diameter of the threaded part. This will save plugging or using a larger screw.—Scientific American.

## Battlefleet Cruise.

From every point of view the round-the-world cruise of the battleship fleet was a pronounced success, and the crowning honor of all has been the recent announcement of the assistant secretary of the navy that the repairs to 12 of the 16 battleships that made the voyage have been completed at a total cost to the engineering and the equipment bureaus of \$50,250, or less than \$4,000 per ship, says the Scientific American. Many were the predictions of trouble, damage, and even disaster, at the time of the starting of the fleet; but not one has been fulfilled. On the contrary, the benefit to the navy in the increase of its physical efficiency and the improvement of its morale has been incalculable.

## Shipwrecks in Hell Gate.

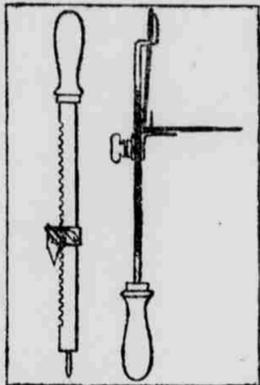
More than \$1,000,000 a year is lost by shipwrecks in the Hell Gate channels in the East river, although millions have been spent on improving the tortuous channels.

Illinois has the greatest number of electric plants of any state, 398; New York is second with 358, and Pennsylvania third with 346.

## CAN OPENER THAT IS SIMPLE.

Every Housewife Would Welcome One That Can Be Used Without Fear of Cutting.

Every housewife would undoubtedly welcome the invention of a really simple and substantial can opener, one that she could operate without danger of cutting her hands. Simplicity and efficiency seem to be the keynote of the one shown in the illustration below, designed and invented by a Detroit man. In opening a can the point at the end is thrust into the central portion of the top of the can and the bar brought so that it lies



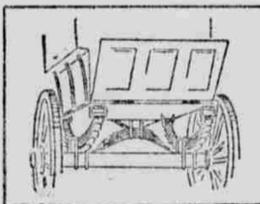
Cuts Top or Side of Can.

parallel with the top of the can. The cutter is then regulated on the toothed bar so that it will cut either the top of the can or the side. With a firm pull on the handle the tin can be easily severed. It will be noticed that there are practically two cutters, one for cutting the top of the can and another for cutting the side of the can. This will be found convenient when it is desired to remove the contents without disarranging them.

## TRANSVERSE WAGON SPRING.

When Side Springs Are Sufficiently Depressed They Come Into Useful Action.

In addition to the ordinary side springs which support the body, a heavy wagon is usually fitted with a transverse spring which is not fixed to the axle but rests one inch or 1½ inches above it. The reason of this is that when the wagon is running empty or with a light load the ordinary springs are sufficient, but when it is fully loaded, and the side springs are sufficiently depressed, the trans-



Transverse Springs.

verse spring comes into action and helps to bear the weight and strain.

## INDUSTRIAL NOTES.

North Carolina, South Dakota, Colorado, Alabama and Virginia, in the order named, lead in the production of mica.

In their writings the Chinese use at least 214 groups of signs, each containing from five to 1,354 separate characters.

An international moving picture exhibition, including apparatus and attachments of all sorts, is being held in London.

France has followed the lead of the United States in the establishment of a laboratory for the investigation of mine accidents.

New Mexico produced 2,467,937 short tons of coal last year, a decrease of a third more than six per cent. from the output of 1907.

## Lighting Niagara.

Plans for the permanent illumination of Niagara Falls this summer have been worked out by Engineer Ryan of the General Electric company. The details will be laid before a committee of interested citizens from Niagara Falls, Ont., and Niagara Falls, N. Y.

The plans, as outlined by Mr. Ryan, call for two batteries of lights, one to be known as the Cliff battery, the other as the Gorge battery. It is planned to excavate a recess in the Canadian cliff opposite Goat Island, this shelf to be 128 feet long and 12 feet wide, and height of the excavation to be 10 feet. Here will be installed twenty projectors, each thirty inches in diameter.

The previous illumination made during the progress of the exposition at Buffalo was of 1,500,000 nominal candlepower, whereas the proposed illumination will be 2,500,000 nominal candlepower.

## Tree Planting by Dynamite.

Holes for tree planting, according to the Engineering Record, have been excavated by the Long Island railway by blasting with dynamite.

A hole about two feet deep was first dug with a post-hole auger at an angle of about thirty-five degrees with the surface, and loaded with half a stick of 40 per cent. dynamite. This shot makes a hole about two feet deep and three feet in diameter, leaving the earth in the bottom pulverized suitably for planting. It is stated that two men can thus excavate 250 holes in a ten-hour day at a cost of about 7½ cents a hole.

# BOYS AND GIRLS

## INTERESTING GAME FOR BOYS

Good Substitute for Baseball Where Large Field for Latter Cannot Be Secured.

One can say nothing unkind about baseball, for it really is a splendid game. Every boy will tell you that. But there are times when an open space large enough for a ball field isn't near, or a sufficient number of players cannot be had. Nor is baseball a game in which girls readily can join.

Eggball is different. Both girls and boys can play in "most any number, and have an enjoyable time. A very small space, easily found in a back yard, provides the "field."

In the center of the field set a rod upright, with its top about eight feet above ground. Fasten to the extreme end of the rod a hook or ring, and to this attach a cord. Carefully empty an egg; then make it secure at the end of the cord, by the method illustrated in the diagram.

Each player has a racket. The rim should be constructed of pasteboard and covered with stout paper.

Little courts are marked, outward from the pole. No player must move from his or her court while the game is on. The eggball is started by a player. Then each player in turn strikes at it with the racket. Any player who misses the ball upon striking



Game of Eggball.

must retire from the game. It is not necessary to endeavor to hit the ball during each round. Too difficult shots may be passed by. That player who remains longest in the game wins.

## REFUSED TO NEGLECT BABY.

Little Girl, Caring for Small Sister, Wouldn't Let Curiosity Get Better of Her.

She was a tiny little girl, with sun-kissed hair, a blue cotton dress and bare feet. She carried in her arms a baby half as large as herself, and the baby was so heavy that it sagged down in the middle, giving the infant the appearance of being held by the feet and the nape of the neck.

There was some excitement around the corner of the next block, and the children were hurrying forward like mad from all directions. The little girl tried to run, but the baby was too heavy, and her breath gave out. Sudd I, in a spirit of badinage:

"Drop the baby, sis, and go see what the trouble is."

She stopped and stared at me.

"I say, put the baby down on the sidewalk and run."

"Yer must take me for a fool, mister."

"Why?"

"Cos this is our baby."

"Well, suppose it is? I'll stay here and watch it for you."

"No, yer won't mister. Yer might carry it off."

"What if I did? Aren't you tired of carrying it around and making your back ache?"

"Naw, I ain't. Say, mister, this is the only baby we've got, and if yer only knowed how she can cry and laugh, yer wouldn't want me to do no such thing. This baby ain't got no ma, 'cept me, and pa and me couldn't do thout her. She sets up in a high chair at the table and crows and kicks while me and pa eats, and at night I rock her to sleep like ma used to do. When ma died the baby didn't know no better, but just laughed and hollered, and I cried so I couldn't keep her still. Put her down on the sidewalk! Foolkiller'll get you, mister, ef yer stand around here long."

## Jamie's Bath.

It was Jamie's bath night. He had several each week and he hated them all. On this particular night, once started, he soaked and splashed in the tub for a full half hour, then his mother haled him forth. He came out of the room in his pajamas with his face all streaked and dirty as it was when he went in.

"Mercy!" cried his mother, "I thought you took a bath!"

"So I did!" answered Jamie solemnly. "A bully one!"

"But your face is black!" said his mother.

"Oh!" Jamie smiled understandingly. "My face is all right. I have to wash that in the morning, bath or no bath. You don't s'pose I'm going to waste time bathing my face? I always begin just below my ears and work down on my arms and legs; but I always leave my face and hands—those ends I tend to in the morning."

## TOO WARM.



Too warm to work in the summer, With lazy hands and feet; But if a watermelon is out 'Tis never too warm to eat.

Too warm to work in the summer; But to romp and play and run Is such a very different thing, For 'tis never too warm to fun.

Too warm to work in the summer; But to romp and play and run Is such a very different thing, For 'tis never too warm to fun.

## VERY FOOLISH LITTLE BOY

Forgot That People Who Live in Glass Houses Should Not Throw Stones—Disastrous Result.

There was once a little boy who lived in a house all made of glass. He lived with his mother and his father and his nurse, and he used to have a lovely time sliding on the glass doors. And everything went well while he was good, but one day he wasn't. He was cross. When he slipped on the glass floor, instead of thinking it fun, he was angry, and when he went down to breakfast he slid down the glass banisters, which he ought not to have done. And he spilled his milk on the glass table and made marks all over the glass walls with soap. And finally he looked out of the win—I mean the wall, for, of course, all the walls were windows—and saw some children playing and making lots of noise. That made him crosser, so he went down to the back yard and collected a lot of stones and went upstairs again and threw them at the children, which was the naughtiest thing yet. He couldn't dodge out of sight, because the whole wall was glass, so when the children looked up they saw him there. They were quite indignant, so they picked up the stones and threw them back at the little boy. They hit the house in all directions, and made such alarming jagged holes that the little boy's mother and father came running in, and taking the little boy's hands ran downstairs and out as quickly as possible. The house collapsed completely. The father shook his head.

"We'll have to take a brick cottage," he said. "Oh, my boy, don't you know that people who live in glass houses shouldn't throw stones?"

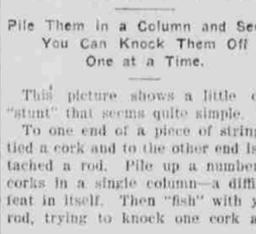
## LITTLE STUNT WITH CORKS

Pile Them in a Column and See if You Can Knock Them Off One at a Time.

This picture shows a little cork "stunt" that seems quite simple.

To one end of a piece of string is tied a cork and to the other end is attached a rod. Pile up a number of corks in a single column—a difficult feat in itself. Then "fish" with your rod, trying to knock one cork at a

## Getting One at a Time.



time from the column without destroying the balance of the other corks in the heap.

It takes a skillful person to do this trick successfully.

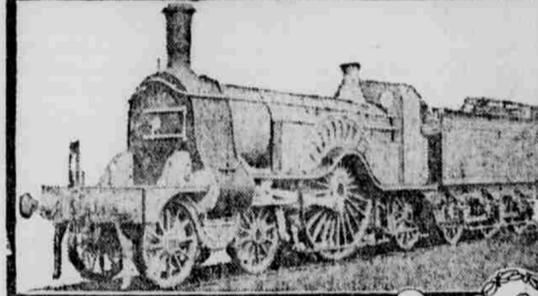
## Tiny Magnificent Slippers.

When the new baby princess of Holland puts down her royal foot by way of emphasis, it will be with the most beautiful American footwear that ever graced the sole of a pre-emptive monarch. Her slippers have been designed and made by an American shoemaker, from the faintest and finest piece of white kid and catkin ever turned out in Paris. One specially beautiful pair have been lined with pieces of Queen Wilhelmina's wedding gown, and the cost was \$200.

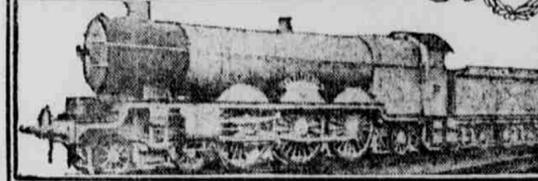
## What Am I Doing?

The players in this game seat themselves in a row and the leader of the game takes his place behind them, beginning at the top of the row. He makes some absurd gesture and then asks the person behind whom he is standing: "What am I doing?" If the players replies incorrectly, and he generally does, he is doomed to stand up and imitate in silence the gesture he could not guess, until he has leave to sit down.

# MODERN RAILWAY TRANSIT



ENGINE BUILT IN 1870



"GREAT BEAR," HEAVIEST ENGINE IN ENGLAND

The development of train service is often not fully realized until our attention is called to the number of trains running between our chief towns. Taking the summer time table of 1908, for example, there were 22 down and 29 up trains between London and Glasgow; between London and Edinburgh there were 30 down and 28 up; while between the metropolis and Leeds there were 46 down and 50 up, and between London and Manchester no less than 58 down and 53 up, that is, on an average, a 26-minute service. It must be borne in mind, however, that different routes are taken by many of these trains and consequently different towns are connected up by trains running between the same points.

Although comfort and frequency of service are two important features in railway improvements, the increase in speed and in the number of long non-stop runs daily being performed on many of our main lines emphasizes perhaps more than anything else the high degree of efficiency our railways have attained. During the past summer the time tables of our chief lines showed a total of over 155 runs of more than 100 miles without a stop. Of these the fastest running is done by two expresses on the Great Western railway, which cover the 118½ miles between Fiddington and Bristol in two hours, giving a start to stop average speed of 59.8 miles per hour. Next to these comes a run on the Great Northern railway from Grantham to King's Cross, 105½ miles, at an average speed of 57.7 miles per hour.

To maintain such high speeds for so many miles demonstrates what vast improvements have taken place in the steam locomotive, for in 1870 the quickest average speed in this country was only 42 miles per hour. It is only by the aid of water-troughs that these long non-stop runs can be made; the troughs, which are about 500 yards in length, are placed between the rails and are automatically kept full. Water can thus be picked up while running by a scoop under the tender, which is lowered into the trough by the engine-men, the speed of the train forcing the water up the scoop into the tender tank.

In the development of train work nothing has played a more important part than the locomotive, for, as the traffic and the demand for rapid transit have increased, so has the locomotive been brought up to the necessary state of efficiency, not only as regards speed, but in economical working, without which it would have been an impossibility to give the public what they desired. The modern locomotive is an evolutionary product, and although the main principles remain much the same as in the early engine, it would be hard for the layman to recognize any of the old in the new. The invention of the locomotive is nowadays absolutely indispensable to our daily existence. In its earliest days it has been likened in appearance to a medieval engine of war and was originally used only on colliery lines because it could pull a few more trucks than could a horse. The idea of speed never seemed to enter into the minds of its promoters, and at the opening of the Stockton and Darlington railway in 1825, when the locomotive made its first appearance in the interests of the public, considerable surprise was caused by the speed it attained of some 12 miles per hour. It is recorded that the horseman who preceded it with a flag had promptly to clear out of the way, to the wonder of the assembled crowd. At first it met with a considerable amount of opposition and many strange objections were taken to it; but as soon as it began to be recognized what commercial prosperity was wrapped up in its development all these objections disappeared. It was not, however, until the famous locomotive content at Rahnill in 1829 that the hitherto doubtful question of its practical success was settled once and for all. On that occasion the Rocket, designed by Stephenson, astonished the spectators by running 25 miles in one hour 45 minutes and attaining a speed of nearly 30 miles per hour pulling a load of 13 tons.

This historic engine weighed 13 working order 4½ tons and was carried on four wheels; its tender fully

loaded weighed 3¼ tons. The driving wheels, which were the foremost of the pair, were four feet 8½ inches in diameter, and the cylinders, placed outside on the sides of the firebox, were eight inches in diameter with a stroke of 16½ inches. But the chief feature which undoubtedly contributed more than anything else to the success of this crude-looking machine was the tubular boiler with which it was fitted. These tubes greatly increased the evaporating power of the boiler and enabled the engine to run at higher speeds without getting short of steam. The Rocket is now to be seen in the South Kensington museum, having, however, undergone several alterations from its original state. Some idea of the size of this engine compared with one of our modern giants can be obtained when we find that the total weight of the Rocket was not half as much as is carried on one of the driving wheels of the Great Bear.

The natural outcome of Stephenson's success was the appearance of many other engines of various designs and embodying some queer ideas. As, however, the railways began to spread over the country and the great trunk lines to be formed, so the work of the locomotive grew heavier and development became essential to cope with the increasing traffic and to meet the demand for faster trains.

The latest development of locomotive building on our railways is shown in the illustration of the Great Bear. This engine, which was constructed last year at the Swindon works of the Great Western railway to the designs of Mr. G. J. Churchward, is the biggest running in the kingdom. It weighs in working order 87 tons, and with its tender 142 tons; it has four cylinders, all 15 inches by 26 inches, and driving wheels six feet eight inches in diameter. On account of the great size of its boiler it is carried on 12 wheels, so that the extra weight is spread out over a longer wheel-base and the strains on the permanent way and bridges are not increased. When we compare this monster with its predecessors of 70 or 80 years ago some idea of the vast change and development that has taken place in the steam locomotive can be realized. The iron horse has indeed revolutionized the social and commercial life of the world and in its present form represents perhaps the greatest of the many triumphs of steam.—J. R. Bazin.

## Church as Smugglers' Cave.

Owing to the presence of the fleet in the Thames, Canvey Island has had a great influx of good class visitors. Everybody visits the one little church with its many stained glass windows, which is famous for some amazing smuggling exploits.

The present vicar, the Rev. Watson Hager, M. A., relates how within the last half century, before he was appointed, the church was served from the mainland village of Benfleet. The bishop of the diocese had arranged for 26 services to be conducted during the year, intending of course that they should be held fortnightly.

Instead, however, they were held consecutively, so for six months of the year the church was never opened. Taking advantage of this extraordinary state of things a band of smugglers used the building as a very safe hiding place for storing kegs of rum, bales of tobacco, loaves and other contraband goods.

Some of these daring smugglers are still living on the island.—London M. A. P.

## New Idea for Long Life.

A novel method of attaining longevity was practiced by Mrs. Yetta Schulman, who died recently in New York at the advanced age of 105 years. Mrs. Schulman paid no particular attention to points of diet, exercise, sleep, etc., which usually figure largely in rules laid down for those growing old. She believed that the lives of aged persons could be prolonged if they associated constantly or nearly so with young people, and she apparently verified her theory, for she spent the greater part of her time in company with children, even taking part in their sports with lively interest.—Leslie's Weekly.