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EXPLOSION IN A GREAT SEWER.

The main sewer of the drainage system of St. Louis, Mo., was destroyed July 26 by the explosion of vapor of petroleum and naphtha mixed with air, the vapors being derived from the drainage of oils set loose by the late fire at the oil works of the Waters-Pierce Oil Company. The high water in the river caused a blocking of the mouth of the sewer, and in consequence of the lighter gravity of the oil it was retained in the sewer, floating upon the water, thus generating the vapors and mixed air that was by some unknown cause ignited, with most disastrous effect, blowing up a building with about 1,000 feet of the street and the tracks in the Iron Mountain Railway yard. Six persons were killed and many injured. The narrow escapes are thrillingly described in the local papers. The water mains were broken, requiring the shutting off of the water in the entire neighborhood. The fact that oil naphtha and gasoline were escaping into the sewer since the fire in the oil works seems to have been known to the city authorities, but no attention was given to the dangerous condition of the sewer until the final catastrophe has stirred the city of St. Louis as to the responsibility of allowing a magazine of explosives to accumulate under their feet. When will people and authorities learn that the vapors of petroleum and its products are as powder when they are mixed with air in confined places, and only requiring a light or a match at any point of escape to evolve an earthquake?

THE RAILROAD STRIKES.

In our last and present issues we present our readers with some views of Homestead and of scenes connected with the steel works, where the recent strike of the steelworkers took place. Much comment was excited throughout the country by the events at Homestead, the attack on the Pinkerton watchmen, and the encampment of the State troops near the town. The actions of the strikers on this occasion rose to violence and murder, and those who to all appearance were peaceful workmen, when incited by the occasion of a strike appeared in the guise of open rioters. Claims were made that the works were patrolled and that the property therein was guarded by the strikers. Some of their leaders appeared as suppressors of violence. But the fact remains that violence was done, lives were lost, and the steel company was excluded from its own works by the strikers.

All this affected a private corporation, the Carnegie Steel Co. Within a few days a new strike has been inaugurated which affects what is to all intents and purposes a public service—the railroad. A strike is in progress among the employes in the car yards at Buffalo, and now it is an open question how far this strike will extend, and what damage it may inflict upon the transportation interests of the country. The railroad, upon which all depend for their most urgent and everyday interests, a factor which enters into the life of the humblest as well as of the richest, is the pivot of action.

The workmen have struck; the leaders of the unions appear in their usual role as deprecators of all violence; and cars are burned, obstacles are placed on the track, and threatened and executed violence and destruction of property are the order of the day. The strikers, as a body, are not, perhaps, active participators in these actions, but they are fully accessories to the crime. They are the witnesses of riotous actions, and stand idly by without so much as protesting or objecting to what is done virtually in their name. If railroad property is destroyed, the destruction is attributed to the strikers. It is possible or probable that it is directly executed by the lowest elements always to be found in large bodies of men, but in doing nothing to prevent it, and in making necessary military troops to be transported hundreds of miles to do riot duty, the strikers as a body assume a responsibility which will do much to deprive them of any semblance of public sympathy in their struggle. It seems as if when a body of men become strikers, they part with their manhood. It is not so much in the submission to the dictation of their leaders, for this has in it the elements of military discipline, but it is in being silent or active accessories to the deeds of violence which the same leaders find it convenient to deprecate.

Service in the employment of a railroad is analogous to the position of a soldier or sailor. The employer, the railroad company, is the ostensible one against whom the strike is directed, but the public is the real party attacked, and the actions of the railroad employes in their strikes have much of the aspect of a desertion in face of the enemy or of a mutiny at sea. When perishable freight is left to go to destruction on the tracks, when goods whose immediate delivery means a business success or failure are not forwarded, those responsible for it are enemies of the public. The desertion of a train, full of passengers, midway between two stations is an offense against the public, of incomparably greater extent than it is when reckoned as one against the company.

In some way the relations of the three parties, the public, the railroad, and its employes, should be so regulated that strikes would be impossible. It is an absolute certainty that in a strike riotous proceedings will be indulged in. But, irrespective of such aspect, the public has most explicit rights to the services of railroads. But for the franchises and extraordinary privileges awarded them, the employes would be engaged in other pursuits. Their very places are the creation of the public, and they are its servants. Their offenses and desertions from duty in face of the public requirements have a special element of ill. The law, in some way, should be invoked to make the punishment of strikers, active agents in destruction of property and in the impeding of traffic, very severe. As it now stands, the privilege is accorded them of interfering with the rights of citizens that outnumber them many thousand times over, and those affected by the interference with traffic do nothing.

A board of railroad commissioners, backed by proper statutes—statutes which would bear upon the railroads as well as upon their employes—should be able to do much to make strikes on railroads a thing of the past. The deserting soldier, the mutinous sailor, deserve consideration almost as fully as the crew of a passenger train that desert it when miles distant from any town, or who bring all transportation on a road to a standstill by open riot. As surely as the railroad companies should be held to responsibility in their treatment of employes, so surely should employes be held to responsibility in their treatment of the public, whose servants they are and to whom their very existence, as a body of employes, is due.

The American Association.

The forty-first meeting of the American Association for the Advancement of Science began at Rochester, N. Y., August 17. Professor Joseph Le Conte, of California, the president-elect, said in his opening remarks: There are three divisions of research which are worthy the efforts of human intellect. They are religion, fine art, and science—three sisters destined to co-operate in elevating the nature of man. What can be greater than to be reckoned as a student of the three? The pursuit of scientific investigation is, without doubt, the greatest honor of the time, and I, as the president of this body, personally have been honored beyond my due in receiving this office. I have met with the body since 1851. You remember the great names that were registered at these meetings. There we saw Dana, Guyot, Peirie, Agassiz, Hall, and many industrious men. But let us not cling to the past and honor it solely. We must not underestimate the present. The golden age is ahead of us and not behind us. The last time I met with you was in 1860. Then came the war and my removal to California. I lost the stimulating effects of the young men. We are apt to think that we teach and educate the young, my friends, but they react on us, and we educate only in proportion as we are educated. Last of all, let me say I will require your constant forbearance. The qualities that I possess do not permit me to preside at meetings of bodies. I have lived in the world of thought and not in the world of men. If this were a political meeting in which there was to be any strife I would have resigned immediately, but a body of scientific men are a law unto themselves.

"The Immediate Work in Chemical Science" was the subject of the address by Albert B. Prescott, the retiring president, who said, in part: The realm of chemical action, the world within the molecules of matter, the abode of chemical atoms, is indeed a new world and but little known. "The atomic theory" has more and more plainly appeared to be the central and vital truth of chemical science. As a working hypothesis it has directed abstruse research through difficult ways to open accomplishment in vivid reality. As a system of knowledge, it has more than kept pace with the rate of invention. As a philosophy, it is in touch with profound truth in physics, in the mineral kingdom, and in the functions of living bodies. As a language, it has been a necessity of man in dealing with chemical events. Something might have been done, no doubt, without it had it been possible to keep it out of the chemical mind. But the atomic theory has come to be more than facile language, more than lucid classification, more than working hypothesis, it is the definition of the known truth in the existence of matter.

The stimulating truth of the atomic constitution of the molecule, a great truth in elastic touch with all science, excites numerous hypotheses, which, however profitable they may be, are to be stoutly held at a distance from the truth itself. Such are the hypotheses of molecular aggregation into crystals and other mineral forms. Such are the biological theories molecules polymerizing into cells, and of vitality as a chemical property of the molecule. Such are the questions of the nature of atoms, and the genesis of the elements as they are now known, questions on the border of metaphysics. Let all these be held distinct from the primary law of the atomic constitution of simple molecules in gaseous bodies, an essential principle in an exact science. The chemist should have the comfortable assurance, every day, as he plies his balance of precision, that the atom-made molecules are

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there, in their several ratios of quantity, however many unsettled questions may lie around about them. Knowledge of molecular structure makes chemistry a science, nourishing to the reason, giving dominion over matter, for beneficence to life.

Studies of structure were never before so inviting. In this direction and in that especial opportunities appear. Moreover, the actual worker here and there breaks into unexpected paths of promise. Certainly the sugar group is presenting to the chemist an open way from simple alcohols on through to the cell substances of the vegetable world. And nothing anywhere could be more suggestive than the extremely simple unions of nitrogen lately discovered. They are likely to elucidate linkings of this element in great classes of carbon compounds, all significant in general chemistry. Then certain comparative studies have new attractions. As halogens have been upon trial side by side with each other, so, for instance, silicon must be put through its paces with carbon, and phosphorus with nitrogen. Presently, also, the limits of molecular mass, in polymers and in unions with water, are to be nearer approached from the chemical side, as well as from the side of physics, in that attractive but perplexing border ground between affinity and the states of aggregation. . . . Various other branches of science are held back by the delay of chemistry. Many of the material resources of the world wait upon its progress. In the century just before us the demands upon the chemist are to be much greater than they have been. All the interests of life are calling for better chemical information. Men are wanting the truth. The biologist on the one hand and the geologist on the other are shaming us with interrogatories that ought to be answered. Philosophy lingers for the results of molecular inquiry. Moreover, the people are asking direct questions about the food they are to eat, or not to eat, asking more in a day than the analyst is able to answer in a month. The nutritive sources of bodily power are not safe in the midst of the reckless activity of commerce, unless a chemical safeguard be kept, a guard who must the better prepare himself for his duty.

"The Spectroheliograph of the Kenwood Astro-Physical Observatory, Chicago, and Results Obtained in the Study of the Sun," was the title of a paper read before the Astronomical section of the association by Mr. George E. Hale, of Chicago. He described the ingenious apparatus which he had invented and perfected for photographing the faculæ and protuberances of the sun. This apparatus has successfully photographed the bright spots, showing faculæ which the eye cannot detect. Means were devised for taking on the same plate at one exposure both the faculæ and the protuberances, and Prof. Hale exhibited the first complete picture of the sun ever taken. An observation of unusual interest was made on July 15, 1892. A photograph of the sun showed a large spot. A few minutes later another photograph was taken, which when developed showed that the bright band had appeared since the last exposure. Twenty-seven minutes thereafter another photograph showed that almost the entire spot was covered with brilliant faculæ, which by the end of an hour had entirely disappeared, leaving the spot as at the first exposure. This indicates an eruption proceeding with indescribable and inconceivable velocity. This disturbance seems to be connected with magnetic disturbances and the brilliant aurora noted the next day. The section with much enthusiasm passed a vote of thanks to Prof. Hale for his researches.

The results of some interesting experiments in regard to persistence of vision were given in a paper on that subject by Ervin S. Ferry, of Mount Vernon, N. Y. His conclusions entirely disagree with the old theory that the persistence of vision depends on color. "According to the old theory," said he, "when it was noticed that the image produced by the spokes of a revolving wheel was more or less persistent, according to the color of the spokes, it was reasoned that persistence of vision depended on color, and I think the experiments of the last year upset this theory and indicate that color is not the important feature, but brightness of light. The experiments were carried out by taking the normal eye and measuring the direction of that impression for different colors. It was found that these varied from 8-1000 of a second to 36-1000 of a second, depending upon the brightness of light. We next experimented upon color-blind people, and found that color made no difference in the change of the phenomena."

Robert T. Hill read papers before the Geological section on the volcanoes of North America and the geology of Mexico, giving the result of recent personal observations. He called attention to the renewed activity of volcanoes throughout the world, and pointed out the probability that some of the numerous extinct volcanoes in the western part of the United States may again become active. These craters are all in the West, and the volcanic belt extends into Mexico, where volcanoes in similar geological strata now show renewed activity.

Professor Riley read some valuable papers to the Entomological Club. Professor Fernow, before the Economic section, again sounded the note of warning so often heard, but not heeded, as to the danger which threatens the government timber lands from thieves and fires. He said: "We have only twenty to twenty-four watchmen to protect 20,000 square miles. We expend $100,000 a year and rarely succeed in receiving about that value back. We need a thoroughly organized and efficient service costing $2,000,000 or $3,000,000, which would result in saving $20,000,000 to $50,000,000 a year."

A new parasite found on the skins of cattle was the subject of an interesting discussion, during which Dr. C. U. Stiles, medical zoologist of the Bureau of Animal Industry in the Department of Agriculture at Washington, said: It is a new disease in the skins of cattle, and is caused by a minute mite, the scientific name of which is Demodex folliculorum. The parasite is common among dogs, and is also found on pigs, cats, and sometimes on man. It has been noticed once or twice before on cattle. During the last year there has been considerable complaint from manufacturers on account of the poorness of leather produced. It is called 'pimply leather.' A number of investigators examined the leather, and came to the conclusion that there was some fault in the process of preparation. Last winter specimens of this leather were sent to Secretary Rusk with a request for an expression of opinion as to the cause of this peculiarity. The material was handed to me, and I succeeded in proving that this condition of the leather was not due to any defect in the preparation, but to a minute parasite which lives in the follicles at the roots of the hair, which multiplies there, and by increasing in great numbers enlarges the hair follicles in the form of a pustule. It is this enlargement of the hair follicle that shows on the leather. The loss to the leather industry has been extensive. Leather manufacturers in the West say that they had lost on the average 50 cents on a hide. There is no known treatment for the disease, but it is recommended that herders keep a close watch on their herds, and as soon as the disease is noticed, keep the cattle infected isolated. The particular parasite found on cattle represents a separate variety from that found on dogs and man, so that there is probably no danger of infection to man from contact with the cattle.

"Hypnotism and its Antecedents" formed the subject of an address by Professor Joseph Jastrow. The career of Mesmer was sketched; the practices which he devised and the theories which he spun about them were delineated, and an analysis made of how far these involved the facts of hypnotism. While Mesmer's practices undoubtedly involved several of the phenomena of hypnotism, his work entitled him simply to be classed among the antecedents of hypnotism. The chief points of Mesmer's career were given in some detail, including an account of the commission of 1784. In 1784 the Marquis De Puysegur accidentally discovered somnambulism while following the Mesmeric practices. He appreciated the importance of his discovery, but at once involved it in much error by supposing that his subjects possessed a variety of super-normal faculties. After the close of the French revolution animal magnetism reappeared in France, and soon found its way into Germany and other countries. It was, however, the extreme and extravagant phenomena that were mainly studied.

Hypnotism was introduced into the hospitals of France, and some operations and cures were performed by its use. In 1831 a second commission on magnetism reported favorably upon the alleged supernatural powers of the subjects, but a commission of 1837 reversed this decision, and a prize of 3,000 francs was offered for any one who could read without the use of his eyes, but this was never gained. In 1840 James Braid, of Manchester, freed the subject of much of its obscurity by showing that the phenomena depended entirely upon the subject, and not at all upon the operator. Unfortunately, after Braid had discovered so much he again deepened the mystery of the subject by announcing that his subjects proved the doctrines of phrenology. From 1840 on, in spite of extravagant and false doctrines, and in spite of the indifference of the medical profession, a few earnest students kept contributing to the advancement of hypnotism, and at last the phenomena found scientific recognition about fifteen years ago, mainly through the efforts of Charcot and Richet. The last score of years had witnessed a remarkable revival of interest in these studies, and as many as one thousand contributions to the subject have been published.

The use of hypnotism in medicine for the suggestive cure of disease is an important phase of the subject, and several instances were given from the literature on this point. The legal side of hypnotism was also discussed. The phenomena of hypnotism are important to the physician, to the physiologist, and to the student of the human mind. While its history shows how readily error is mixed with truth, and the odor of charlatanism and extravagance brings the entire investigation into disrepute, the investigations of recent scientific students have separated the truth from its false surroundings and given the whole a scientific position which it will never lose. Following the lecture was a series of lantern views, illustrating the chief points in the history of the subject. Portraits of Mesmer and of the appliances used by him, as well as the satires directed against him, were shown. The various methods of inducing the state and the more important phenomena were pictured. A variety of interesting views of patients in various stages of the hypnotic sleep were shown, and some of the effects, such as a change of handwriting accompanying a suggested change of personality, the change of pulse, rigidity of the arm, burns on the flesh and the like, were also exhibited.

Brushes.

When a painter buys a poor brush, he is very much like the man who takes in counterfeit money for the genuine article, either a poor judge or too careless of his own interest or too confiding in his fellow man to look at it closely. Now, my boy, here are two propositions which I wish to impress upon your mind: First, that it is of the utmost importance to you that you buy and use the best brushes in the market; second, that nine-tenths of the brushes kept in the retail stores are not worth taking as a free gift, because, no matter how well skilled you may be, a poor, ill-shaped brush will retard your progress, and in measure spoil your work. I have no doubt but brushes are often ruined by careless and improper usage, but judging from long experience and observation, I am led to believe that more of them are spoiled in the making than by improper handling. There are two very important points to bear in mind when selecting a brush: First, is it well made? and, second, is it good material?

Here is a fine-looking brush, with long heavy bristles. Buy it for you? No, my lad, in this case beauty is only skin deep, and the name of the maker or recommendation of the salesman is neither safe to go by. Trust only to your own judgment or to the judgment of some one qualified to buy for you. Open this brush and look at the filling. What is it? Echo answers "What?" It certainly is not good honest wearing bristles. If you soak this filling in water it will no more stand alone than a wet rag. The question whether it is hair, wood filler, Florida grass, or what not, cuts no figure, because it water-soaks and works more like a mop than like a good bristle brush. It has a good fringe of good bristles on the outside, but they fail to do their own part of the work and at the same time furnish the spring for the worthless filling; and the result is, it splits and wears to a saw-tooth edge. I am speaking now of whitewash and calcimine brushes. There is not enough good stock in such a brush, ten inches wide, to make a good three inch wall brush, and yet they are sold at prices which ought to buy a fairly good brush. If there is any one poor brush which I despise more than another, it is a shedder, which, like a sick cat, keeps on shedding the year round. It is surprising to see how many bristles such a brush can shed and seem to grow no smaller. If you find a brush has many loose bristles in it, just make up your mind that there are more to follow, and don't buy it. Don't delude yourself with the idea that you can soak it up and make it hold. Such a brush will go back on you sooner or later. One of the most desirable things about a brush is a good point. To hold a good point, a brush must have good filling. Take, for instance, a flat chiseled brush, its chief value is a good edge or point; but as they are usually made with all the good bristles on the outside and the poor ones in the center, the poor stuff forms the point, except a little on the corners. The soft stuff in the center will wear down faster than the good stock on the outside, and the brush will soon become a stub, unfit for cutting in colors or for anything else.

A brush of any kind should have a good cutting edge, and to do good, durable service should have good stock in the center, because whether ground down or chiseled by wear, the center makes the point. When the point is gone the brush is a stub, and that will soon happen when a brush is filled, like this, with short, uneven, inferior bristles. Every painter should be a good judge of a brush, and exercise his judgment, and take no man's word for it. It is well to remember, my boy, that it costs you more in time to wear out a poor brush than it does to burn it up and buy a good one. If brush makers must use short, uneven stuff in their brushes, I prefer to have it on the outside, and the good bristles in a body across the center, to give me an even and good wearing point. We are using too many poorly filled and badly made brushes, which are dear to us at any price. Let us kick.—*V. B. Grinnell, Painting and Decorating.*

A Depilatory Powder.

According to the *Bulletin of Pharmacy* for February, 1892, the following is a useful depilatory powder:

R. Sulphide of barium	50 parts.
Starch,	
Oxide of zinc, of each	25 "

This is mixed with water so as to form a soft paste, and spread upon the face. In ten minutes' time it is scraped off and the skin is now found to be smooth.

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How Wood Screws are Made.

However unpretentious the ordinary wood screw may be in appearance, its manufacture, as carried out at the present time, says the *Mechanical News*, has called for the exercise of no small amount of ingenuity. Passing, recently, through an extensive works where wood screws are turned out in large quantity, we had every opportunity of witnessing the successive stages of development of a finished screw, from the crude raw material in the shape of steel wire rods, and a brief account of the various processes may here be of interest. The wire rods are first cleaned and drawn into wire of desired gauge for the different sizes of screws to be turned out. This wire, on reels, is then fed into what are known as heading machines, in which the screw blanks are partly formed, the proper length of wire for a screw being cut off and a head being formed by one or more blows from a header. The rude blanks are then dumped into a form of hopper on a machine for cutting the slots in the heads and shaving off the latter so as to present a finished appearance. The necessity for this latter operation arises from the fact that the beveled heads, as formed in the heading machines, are not sufficiently smooth and uniform in shape, the metal flowing more or less irregularly.

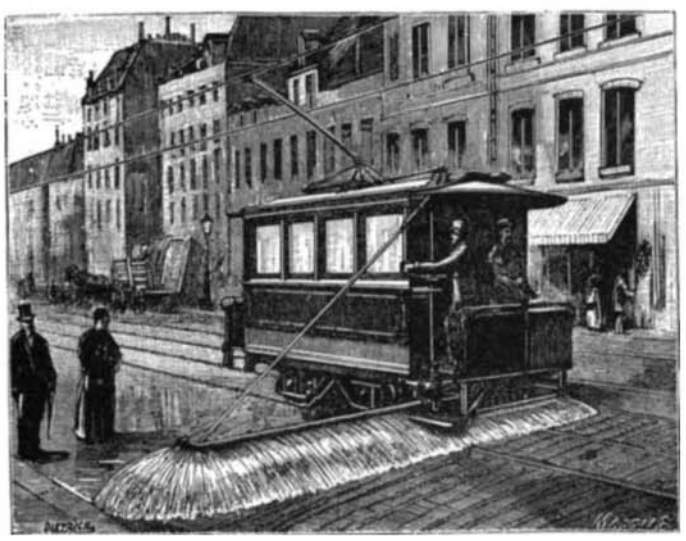
The rough screw blanks are then fed along a slide automatically, each one in turn being held firmly by suitable grips, and are presented to a milling cutter for cutting the slots in the heads and to the tool for turning the head and the beveled surface on the under side. Then the blank is released and falls into a receptacle underneath, making room for the next blank. The finished blanks, having gone through a rattler, are next taken to the threading machine. In this also the entire operation is automatic. The blanks pass along a slide, one by one, in the same way; are gripped and presented, in a horizontal position, to a cutting or threading tool secured in a reciprocating tool block. This has the necessary amount of longitudinal feed to give the desired pitch to the screw head, and has a quick return motion, several cuts being taken on each blank before a finished thread is secured. Soda water is used as a lubricant. The finished screws drop into a box underneath the machine and are then ready for packing and shipping.

One of the most recent methods of forming the threads on the screw blanks is that of cold-rolling the blanks between reciprocating dies having ridges and depressions formed on their faces.

From the nature of the operations it will be readily understood that a large number of machines can be handled by one attendant. All that is necessary for him to do is to see that the feed hoppers on the several machines are kept supplied with blanks. Everything else is done by the machinery itself.

WATERING STREETS BY ELECTRICITY.

The machine for watering streets shown in the accompanying illustration presents externally the aspect of an ordinary street car, in order that it may not frighten horses, but it consists in reality of a large iron plate reservoir filled with water. This latter is distributed over the track and at the sides by means of a horizontal pipe containing numerous apertures. This pipe is jointed at the extremity near the car, and can, through a simple maneuver, be lifted against the side of the car to allow of the passage of the few ordinary vehicles that happen to be on the street during the hours in which public sprinkling is usually done. Two men standing in front maneuver the car and the pipe. This ingenious and economical arrangement, for the illustration of which we are indebted to the *Street Railway Journal*, assures a rapid and regular sprinkling.



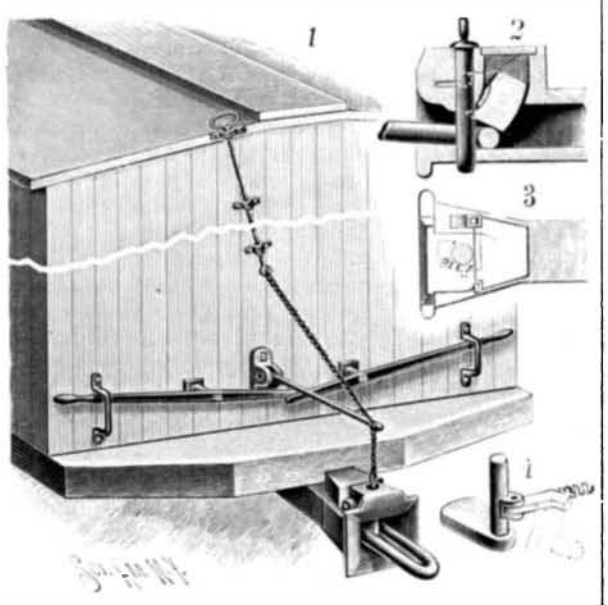
WATERING STREETS BY ELECTRICITY.

Sinking of the Marechal Canrobert.

The French ironclad Le Hoche has just given the world an object lesson in the use of the ram. On July 7, the French squadron at Marseilles was exercising, and the ironclad was crossing the roadstead at full speed, when it struck the mail steamer Marechal Canrobert (1,200 tons), then coming in from Italy, hitting her fair and full. The shock was tremendous, and the captain of the ironclad, foreseeing the consequences, ordered the steamer to be secured to his own vessel, and the passengers transferred. The fastening hawsers were then cut, twelve minutes after the collision, and the steamer instantly sank, the blow having cut her nearly in two. The ironclad remained uninjured. No weight of fire could have secured such rapidity or such completeness of destruction, nor would any strength in the steamer have preserved her from the consequences of the shock. It is by ramming that the first battles of the future will be decided, with this consequence, among others, that the mortality in a sea fight will exceed all precedent. In the old sea fights, a ship rarely lost a third of her crew, including killed and wounded, but the iron ship which goes down under the blow of a modern man-of-war will drown everybody on board.—*Spectator.*

AN IMPROVED CAR COUPLING.

The device shown in the accompanying illustration is designed to facilitate the automatic coupling of railway cars, also allowing them to be uncoupled without the brakeman going between them. It has been patented by Mr. William H. Violett, of Grand Junction, Col. A swinging pin support is pivoted by trunnions in the link mortise of the drawhead, to rest on the inner end of the link when the latter is held in position to enter an approaching drawhead, as shown in the



VIOLETT'S AUTOMATIC CAR COUPLER.

vertical section, Fig. 2. The swinging pin support also serves as a rest for the pin when the latter is raised, the support being pivoted to swing into this position by its own gravity, and being pushed back by the entering link to allow the pin to drop. An auxiliary pin support is also provided for the adjustment of the pin, so that the cars, after being bumped or pushed together, will uncouple when the engine pulls out. The trunnions of the main pin support are held in their bearings by plates, as shown in the top plan view, Fig. 3, and an extension above one of the trunnions operates the auxiliary pin-supporting devices, which do not operate except when the pin is raised without withdrawing the link. The auxiliary support, shown in Fig. 4, consists of a plate turning on the lower end of a short shaft, a link extending from which has a pivoted dog actuated in one direction by a spring to force the plate below the coupling pin, and also adapted for engagement by the extension above one of the trunnions of the main pin support. When the latter is swung back, the spring moves the parts to adjust the auxiliary support against the pin when the latter is lowered, and below it when it is raised. A shoulder on the drawbar receives the force of the jar, after the spring has been exhausted, and also affords protection to the main pin support, which also has a covering or casing to keep out snow, sleet, etc. To facilitate uncoupling from the top or either side of the car, a forwardly extending lever pivoted to the car is connected by a chain with the pin, a rod extension from this chain extending to the car, while the lever is adapted to be raised by pivoted hand levers extending to each side of the car.

Further information relative to this improvement may be obtained from Messrs. De Long Bros. & Marsh, Grand Junction, Col.

Cement for Porcelain.

20·0 white lead and 12·0 pipe clay, carefully dried, are incorporated with 10·0 boiled linseed oil heated on a water bath. The cemented articles are slowly dried in a warm place.

Education and Invention.

Mark Twain, in his new novel, "The American Claimant," introduces his readers to a mechanics' club debate, the manifest object being to satirize the socialistic tendencies of the workmen of the present day. One of the speakers, a self-educated printer, delivers a long harangue to prove that we "overrate the college culture share in the production of the mighty progress" of the nation. "In looking over a list of inventors," he continues, "I find that they were not college-bred men. Of course there are exceptions, but these exceptions are few." Now it has long been a custom, and a very pleasant one no doubt, that as soon as a man has risen to great prominence, his friends have sought to add luster to his glory by making his origin more humble than it really was and representing his education as having been practically neglected. In the life of a presidential candidate, gotten up for campaign purposes, this may be all very well, for our partisanship makes us very credulous, but in the work of a standard author it is entirely different. Now the writer is well aware that Mark Twain is such a funny man that it is often difficult to know when to take him seriously. But in the present instance it is manifest that Mr. Clemens has allowed his reason to be carried away by the popular fallacy that the great inventors were men of little or no education, who started out in life with vague ideas of the alphabet and multiplication table. To say that the inventors, with very few exceptions, were not college-bred is to make a misstatement that could have been rectified at the expense of a very little research. To take only the more noted names in the field of American invention, we find that Morse was not only educated at Yale, but that he achieved success as a portrait painter long before he ever dreamed of having his name connected with the electric telegraph. While very poor in early life, Whitney was quick to see the advantages of education, and endured many hardships for the sake of working his way through Yale College. Corliss received a good academic education, and knew enough to construct a machine for sewing heavy leather before he had ever seen the inside of a machine shop. Fulton was a man of education and was a landscape painter by profession before he became interested in mechanics. The elder Roebling graduated at the Berlin Polytechnic School, and his son was educated at the Rensselaer Institute. Gatling was not only educated, but he studied medicine and took a degree. Moncure Robinson, one of our pioneer railroad constructors and the builder of the Philadelphia and Reading road, whose death was recorded last November, was designed for the law and was educated in the Gerardine Academy and William and Mary College. Dahlgren and Ericsson received a military education, the latter having the title of LL.D. Rodman, of gun and powder fame, was a graduate of West Point; and Thurston, to whom we are indebted for more than one invention, was educated at Brown University. The list could be greatly extended if we included the names of men noted for their discoveries in the sciences, who must of necessity have had the highest education. It is poor policy, at best, for self-educated men to attempt to undervalue the advantages of a liberal education. No inventor need be afraid that he will handicap himself in his work by going through college. To state that Howe and Edison received very little education in early life proves nothing in an argument on this subject. While they deserve all the more credit on that account, who can deny that their services to the world might not have been even greater than they are if they had started out in life with the advantages of a college education?—*Mechanical News.*

A New Variety of Cane.

Many new plants have been brought to light in the recent explorations by Englishmen, Frenchmen, and Germans in equatorial Africa, but one in particular has a special claim to the attention of West Indians.

In the Upper Niger region, where great heat and moisture combine to produce luxuriance of tropical vegetation, a giant variety of sugar cane has been found, which is described as possessing great saccharine richness and being reproduced from seed, which in this variety is well developed. This is indeed news to the sugar planter, and from a botanical point of view confirms the theory that our present cultivated varieties are descended from an original perfectly flowering and seeding plant, the perpetuation of which by cuttings impaired, in course of time, the original attributes of the parent variety. The agricultural board and local planters should take particular note of this reported discovery, and so also should the government botanist. Such a variety of cane introduced in the island would be worth millions of Tusser silk worms, and prove infinitely more advantageous for its prosperity. And it is to be hoped we shall soon hear something more of the Niger cane.—*Port of Spain Gazette, Trinidad.*

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