

**Whitening Positives.**

Bichloride of mercury and other things have been suggested and tried in the process of whitening a dark positive picture, but with no good and satisfactory result. We have found a very simple and pure method by which an ambrotype or ferretotype may be whitened in the shortest time and give excellent results. The first trial was with a much under-exposed picture, which was entirely too dark. After it had been fixed and dried, we ran a stream of water over it again, in order to soften the film; we next prepared a mixture from one part of the usual developer (consisting of protosulphate of iron and acetic acid) with half a part of the silver bath, which was entirely neutral. This mixture we flowed over the picture, and after the lapse of four seconds the picture became nicely white, the half-tones appeared white, while the blacks of the darkest shades remained perfectly uninjured. The solution was now thrown off, and as a number of gray, dirty looking specks appeared on the picture, the usual fixing solution was applied to it again, by which means the picture appeared faultless, the whites being intense and of a brilliant white.

Since that time we have made the same trials with a different developer and an acid silver solution, and obtained the same excellent results. We have carried this redeveloping process further, and in the course of one minute changed a good positive into an excellent negative, which printed very good. We have tried this method with pictures which were more than half under-exposed in the camera, and did not fail in a single instance.—*Practical Photographer.*

**MR. THOMAS A. EDISON.**

Many of our readers will recognize in the engraving the face of Mr. Thomas A. Edison, and others, who are not familiar with his appearance, may form a good idea of how the great inventor looks. Every one is acquainted with his telephone, phonograph, and other remarkable inventions, therefore we shall not notice them here.

Mr. Edison is above the medium height, and although he is only thirty-one years old, his iron gray hair and thoughtful eye show the effects of continued study. He is genial, liberal, and entirely unostentatious. His mind, day and night, is on his projects; and even while eating his thoughts dwell on his inventions. His table conversation consists of occasional ejaculations regarding some new point in whatever project he may have in hand. He is at home in his laboratory, which is very large and complete in all of its appointments. He has a number of assistants, who are competent and quick to carry out his wishes, and they are often engaged on several widely different subjects at the same time. The experimental apparatus which is completed during the day is often tried at night when all is quiet and no visitors are present.

Notwithstanding his great mental labor, he avers that his health is good, and that as his occupation is pleasurable it does not tire him.

His residence and laboratory at Menlo Park are beautifully situated upon the brow of a hill that overlooks a picturesque valley. The beautiful landscape and the mountain

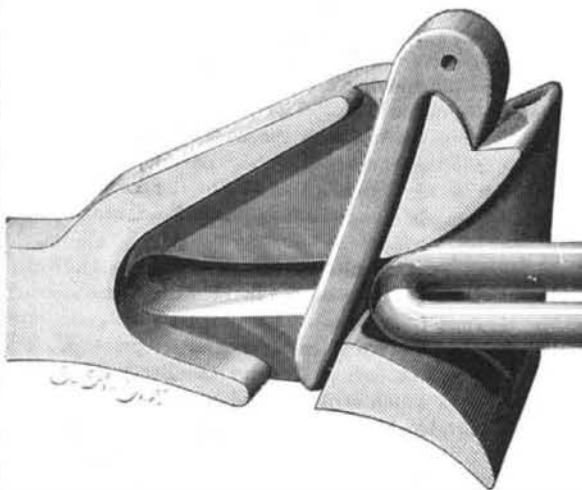
air—Nature's best restoratives for the brain-weary—he has without the seeking.

Mr. Edison may well pride himself as to his position in the world of science, standing, as he does, first among the inventors of the day; and having, by his own energy and persistence, secured an income that enables him to carry forward on a grand scale such experiments as his prolific mind may suggest.

We publish in another column a detailed account of Mr. Edison's researches in telephony.

**PATTESON'S IMPROVED CAR COUPLING.**

The annexed engraving represents a new and very simple form of automatic car coupling. It will be observed that there are no more parts in the device than in the common coupling now in use, and that the operation is positive and



PATTESON'S CAR COUPLING.

can hardly fail. The shape of the interior of the drawhead is evident from the illustration. The pin hooks over a projection on top and passes down through to a slot beneath. The entering link pushes the pin back, causing it to swing on the point of the hooked portion. The lower end of the pin is thus lifted as the link passes under it, and allowed to fall back into the link opening, thus effecting the coupling by the simple action of gravitation.

Practical railway men will at once see the great simplicity and utility of this coupler as a life-saving apparatus to brakemen. The drawhead will be from 15 to 20 pounds lighter than the old one, and much thicker and stronger in front. Cars can be run closer together, as no one goes between them to couple, and shortening the length of the train will cause a more compact and less jarring pull. When coupled, the link is not cramped, and can work in every direction. The pin fits plumb in the lower part of the drawhead, and is sufficiently inclined to make the pull steady, and against the upper and thicker part of the drawhead, and cannot bounce up or be jolted out of place. An asbestos rope is

put in the head of the pin and hooked to the top of a freight car, so that the brakeman can uncouple from the top of the car, or at the side of the track, without going between the cars, and can pass from car to car more easily, as the boxes will be nearer. The drawheads can be used nearly touching, by cutting the hole for the pin more to the front and correspondingly reducing the rear space and link; the front of the drawhead to be blaring and very strong, especially the upper half, which will withstand the main pull.

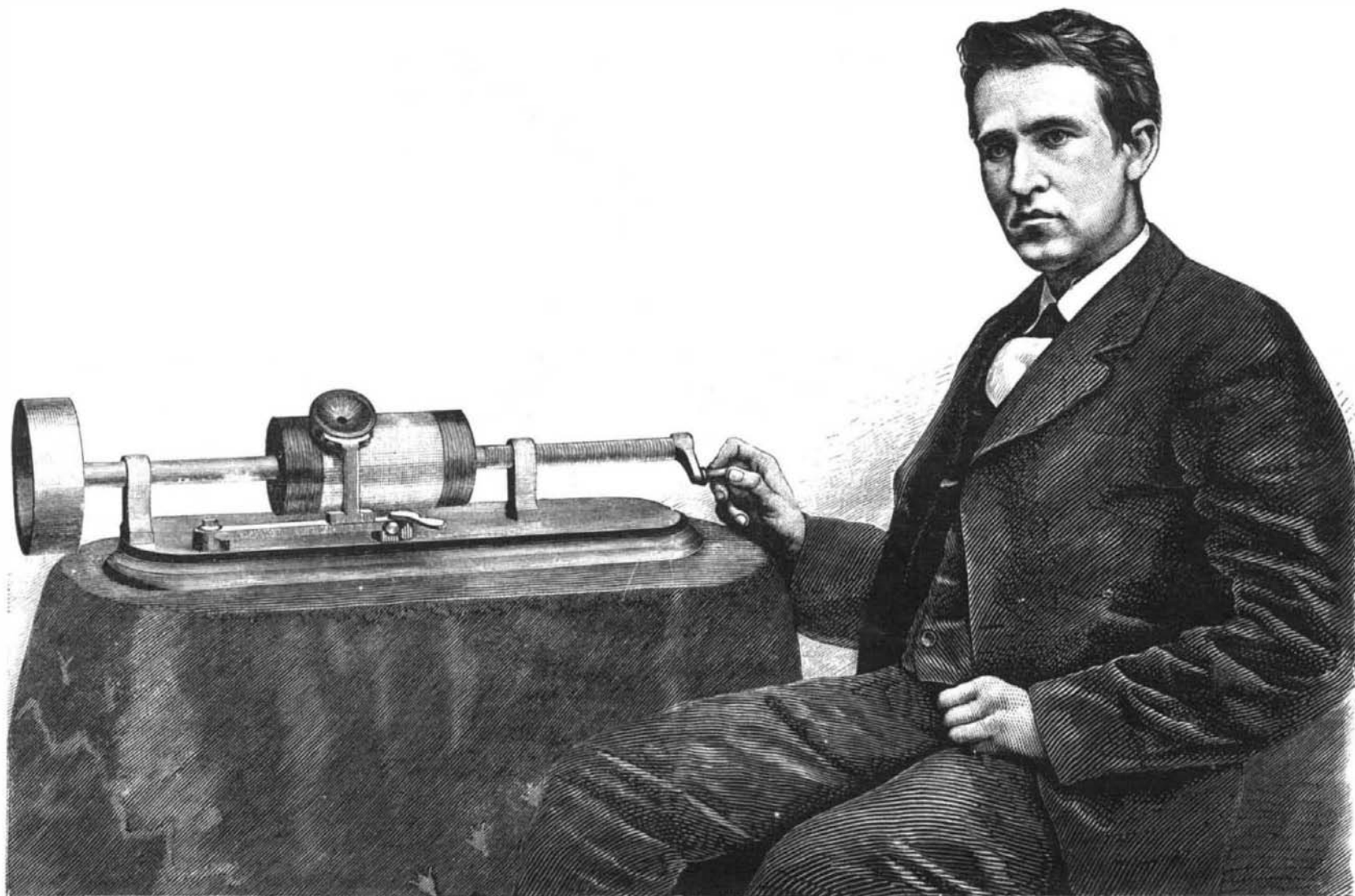
This simple automatic coupler has no springs, bolts, bars, or screws to rust, break, or get out of order, and is pronounced by many railway experts the most perfect yet invented. Patented February 26, 1878. For particulars touching its introduction, sale, etc., address E. M. Drane, Frankfort, Ky.

**Project for Increasing the Water Power of Pennsylvania.**

The head waters of the Pennsylvania streams are not very much higher nor are they far distant from the rapids at Niagara Falls, and the suggestion of increasing the water power of the State of Pennsylvania to an almost unlimited extent by using the power of the Niagara Falls to force a supply from the head of the rapids across to the head waters of that State is believed to be feasible. The water power which could thus be thrown into the head waters of the Ohio and Susquehanna to be used a hundred times over would be of incalculable value to that great industrial State, while its cost would be but a trifle compared with steam, more especially now that the dams and water wheels already exist. The same principle of supplying power to other streams, but by steam power, it is believed will be found feasible, especially where the stream is so rapid and the dams so numerous as to completely use the water when furnished. The water leaving the Connecticut at Holyoke, Mass., turns the water wheels for mills located upon six different terraces, so that the same water is used six times over in a distance of less than two miles.

**A Japanese Built Ironclad.**

A Japanese ironclad, the Li-ki, five guns, is now on her way to England, making a call at all the principal Asiatic and European ports *en route*. Unlike most of the vessels belonging to the Japanese navy, the Li-ki was built in Japan, under the superintendence and from the designs of M. Chiboudier, a French gentleman employed in the Imperial Arsenal of Yokoska. It will be remembered that the English Government lately made overtures for the purchase of three or four gunboats built in that country for Japan, but were unsuccessful in their bids for the vessels. The visit of a native-built ironclad to Portsmouth is therefore looked forward to with considerable interest. The Li-ki was built in 1874. Her length is 191 feet; breadth, 22 feet; draught forward, 11 feet; and aft, 13 feet. She has two decks, the upper one carrying five guns. The state cabin, ward-room, etc., are handsomely fitted, and the whole arrangements of the vessel are said to be very complete. Her officers are nearly all native Japanese.



THE PHONOGRAPH AND ITS INVENTOR, MR. THOMAS A. EDISON.

### A Great Public Nuisance.—The Steam Street Railways of New York City.

The noise of the trains on the Metropolitan Elevated Railway has called forth a strong protest from the residents along Sixth avenue. A deputation representing the property holders on that avenue lately waited on the president of the company, to complain of the nuisance, and to ask that it should be abated. Mr. George W. Pell, of No. 438 Fifth avenue, was the chief spokesman. He alluded to the losses likely to be incurred by storekeepers and others along Sixth avenue if the great and incessant noise which prevails at present continues. This gentleman said that while he was not personally opposed to rapid transit as it now exists, he was bitterly opposed to any company whose trains made such an awful din as do those of the Metropolitan Railway Company. Mr. Pell said that though he resided on Fifth avenue, a block distant, he and his family were considerably annoyed by the constant roar of the cars. He enumerated a score or so of churches which would probably have to be shut up if cars were run on the Sabbath, and closed his remarks by characterizing the noise at present made by the trains when in motion as a perfect nuisance, and stating that if something was not done immediately to suppress the evil complained of, the property holders on Sixth avenue would rise *en masse* and protest against such a high handed outrage. Mr. F. K. Keller, of No. 664 Sixth avenue, who keeps a large meat market under the Marlborough House, spoke next, and said that, while willing to sacrifice his property for the convenience of the general public, he was not willing to be ruined in health and business by the elevated road as it was now run. Mr. Keller remarked that when customers enter his place of business he experiences the greatest difficulty in hearing what they say, and the result is that he and those who visit his place have to shout into one another's ears. He asserted that he was under medical treatment, having so strained himself a few nights ago in attempting to make his voice audible above the din of the cars that, when he reached his residence, he spat up blood in large quantities, something which never occurred to him before in the whole course of his life. President Foster, in reply, said he thought it very strange that Mr. Pell should be in any way disturbed by the working of the road, considering that he lived a block away, in Fifth avenue. The president said that he had for several nights slept within two or three houses from Sixth avenue, and that he was not in the least troubled by the trains, though the latter passed up and down the track at a very early hour in the morning. The president admitted that an unnecessary noise was made by the cars, but contended that it was not of such a nature as to prevent sleep, or interfere with business in any way. He said that the question of running the cars with a view to making as little noise as possible is now under consideration by the officers of the company, whereupon the deputation withdrew.—*N. Y. Times*.

One of the minor annoyances of the Gilbert Elevated road to the storekeepers on Sixth avenue has been the frequent destruction of the awnings by sparks from the passing locomotives. Spark arresters have been tried, but have proved altogether too successful, arresting not only the live cinders, but the locomotives also, by checking the production of steam. The evil might be largely reduced by making the awnings fireproof. This can be done by saturating them with solutions of various simple bodies, as common salt, alum, or borax. Sulphate of ammonia would be still more effective. For permanent awnings not rolled up, silicate of potash or soluble glass might also be used. None of these substances would make the awnings absolutely incombustible, but they would prevent them from bursting into flame, and reduce the damage from falling sparks to a minimum.—*New York Tribune*.

A recent number of *Charivari*, a French comic journal, suggests that as the mad dog season is approaching, true humanity and proper affection for the brute creation will deter their inconsiderate slaughter, and that in preference pedestrians should wear large wire shields around their shins, to ward off bites. The intelligent reader will perceive the analogy between this suggestion and that of our contemporary.

### What the South owes to New England.

New England mechanics and manufacturers invented and made the first machinery for the manufacture of American cotton, and thereby made a market for the staple product of the South. Arkwright's machinery was not adapted to the use of American cotton. Slater, the pioneer in the cotton manufactures in this country, did not use American cotton in his mills in Rhode Island. He had been employed in Arkwright's mills in England, where it was not used, and the machinery, constructed from models or drawings he brought with him, was not suited to the use of American cotton. Lowell, on the other hand, used nothing but American cotton, and constructed his machinery for that purpose. By virtue of that machinery the American staple was made an article of commerce. Thus to Whitney and Lowell the South is chiefly indebted for all the prosperity derived from cotton that it has ever enjoyed. The success of American cotton fabrics in China compelled the British to use American cotton and adapt their machinery to its use. And the reason that Indian and Egyptian cotton is not now more greatly used is that English machinery is better adapted to the use of our cotton. With these and collateral facts, Hon. N. P. Banks was able to make a telling argument against the proposed change in the tariff law. Protection to the

American cotton manufacturer was quite as beneficial to the cotton planter as to him. To cripple or destroy the cotton manufacturer of this country is to unsettle and injure in all markets the demand and the value of American cotton. The industry that first employed American cotton, and has since steadily maintained the demand for it, is the best and most reliable patron and protector. Said Mr. Banks: "Let the cotton planters drive the Americans out of competition with England and force the adaptation of British cotton machinery to the use of Indian and Egyptian cotton, which they describe as the best cotton of the globe, possessing all the qualities of the finest long silks of the sea islands and the short silks of Louisiana, and they will destroy the market for American cotton in this country and in Europe. Cotton is no longer king. Machinery is king. It was crowned at the American Centennial Exposition in 1876."

### New Mechanical Inventions.

Mr. Thomas J. Paradine, of Erie, Pa., has patented a new Safety Valve and Cock for steam cylinders, which is so constructed that the opening of the cock takes place whenever the engine is exhausting. The water of condensation is thus allowed to pass through the upper chambered part of the valve and the exit spout to the outside, relieving the cylinder of the high pressure caused by the compression of water between the piston and cylinder head after the exhaust port is closed.

An ingenious mechanical arrangement of an Automatic Inking Device is embodied in a new Printing Press patented by Mr. Edward L. Gilman, of Somerville, Mass., and especially adapted to the use of amateurs and job printers. The same motion which carries forward the ink roller throws forward an arm which strikes a stud and releases the paper.

A new Portable Hand Windlass, whereby it is claimed two men can do work which would otherwise require eight or ten men, has been patented by Mr. Orleff Fredrickson, of New York city. The mechanism is simple and compact, and the device is well suited for nautical use.

An improved Gin Saw Filer, devised by Mr. Edward L. Harris, of Red Banks, Miss., has devices for reciprocating the file and rotating the saw. The novel features are embodied in the carriage which supports the file carrying mechanism. Ingenious means are provided for varying the angle of the teeth.

Mr. Adolphus H. Vitt, of Union, Mo., has patented a new Piston Rod Packing, which consists of recessed sectional shells and sectional brass rings arranged therein in combination with retaining springs and sleeve and end rings. This packing is claimed not to heat or abrade and to require but little lubrication.

Mr. Jacob Mackey, of Steubenville, Ohio, has devised a new Tuyere for Blast Furnaces, which is made in two parts, and is provided with closed bottoms to obviate the necessity of joints and prevent leakage.

Messrs. Joseph F. Wooldridge, Johan F. Nystran, and Lyman D. Howard, of Richmond, Va., have patented a new Lump Tobacco Machine, for giving an initial pressure to the filler of the plug before the binder is put on, and for discharging said lumps continuously and consecutively without loosening, breaking, or destroying in any way the integrity of the material.

Mr. Wm. S. Hull, of Hinds Co., Miss., has recently patented a new Screw Propeller, which is an improvement upon the screw propeller for which letters patent were granted the same inventor February 20, 1877. Said improvement chiefly consists in giving to the leading edge of the right angled triangular blade a finer pitch, or smaller angle to the plane of rotation of the blades, than the pitch or angle of the rear portion of the blade.

Mr. Thomas L. Lec, of Paducah, McCracken Co., Ky., has patented a new Dredging Machine, the new feature in which is the particular construction of the dredging cylinder, which has a body made in the form of an elongated shell, with longitudinal blades arranged upon the periphery of the same, so as to operate laterally upon the mud and sand, thus beating the same so as to uniformly impregnate the water with it.

Mr. Wm. H. Phelps, of Greenville, Meriwether Co., Ga., has patented a new Horse Power, in which the object aimed at is to attain maximum speed and power with a minimum length of sweep or lever. To this end, the inventor adopts a novel combination of gears.

Mr. David Gates, of Benwood, Marshall Co., W. Va., has patented a novel Drag Sawing Machine, which saws logs and timber into sections. A horse power gearing is attached to a wheeled frame, and the saw is detachably connected with a reciprocating cross head by means of a bolt and clevis. The saw is guided in its movement by a bar which is attached to the log.

### Iridescent Glass.

The lustrous, metallic-looking glass, of iridescent quality, which has created so great a sensation of late, is, it appears from the English patent of Mr. Thomas W. Webb, produced in the following manner: Chloride of tin, or tin salt, is burnt in a furnace, and the glass having an affinity for it, when hot, receives the fumes, and so at once an iridescent surface is produced. To give greater depth to the color or tints, nitrate of barium and strontium is used in small proportions. By this patent the glass is not re-heated, but the iridescence is produced during the manipulation of the article when in the hands of the blower, and while on the punty.

### Fast Paper Making.

The long promised trial at the mill of Messrs. M. T. Close & Sons, Iowa City, Ia., took place on the night of May 24. Our readers will remember that this firm published a statement that on a certain date they had run 7,150 pounds of straw wrapping paper, 16 by 22 inches, 35 pounds per ream, in twelve hours, on a 62 inch machine. The possibility of such a run was denied by many paper makers, among them Mr. A. Siddle, of the Clinton, Iowa, Paper Company, who offered to pay one hundred dollars to have this alleged run repeated in his presence. Messrs. Close & Sons accepted the challenge, and appointed the day, and Mr. Siddle and the editor of this paper went to Iowa City to see the test. We found a splendid machine of great drying capacity, and excellent facilities in the mill for beating the stock. The machine had been provided with a new felt expressly for the run, and everything was in good shape, with two exceptions: the river had risen so that the head was said to be some 3 feet less than when the previous great run was made, and it was claimed that the straw, which was mainly rye, with some wheat and oat, was not in good condition and contained some grain.

The run was commenced at 6 P. M., and at the expiration of twelve hours there had been made 6,615 pounds, or 189 reams, being 15 reams, or 535 pounds, short of the agreed amount. The promised feat, therefore, was not accomplished, and Mr. Siddle saved his hundred dollars, for that time at least. The run, however, as all will agree, was a very remarkable one, and probably has never been equaled. There is no question that it was conducted with the utmost fairness. There was no flax or other hard stock used, the reels were empty at the start, and the count was honestly made. To make the promised run, a speed of 83 feet per minute, without a break for twelve hours, was necessary. The machine ran from 73 to 88 feet a minute, and Mr. Close claims that if the head of water had been at the best, and breaks had not been caused by poor stock, he could easily have done what he claimed. Indeed, he says that some time he will run 8,000 pounds in the same time.

In view of the disadvantageous circumstances Mr. Close claims that he is entitled to another trial for the hundred dollars, and he asks the opinion of paper manufacturers through the *Western Paper Trade* as to whether he is not entitled to it. What do our readers say? Mr. Siddle's challenge did not limit the offer to one trial, but asserted the run alleged could not be made, and if he is of the same opinion he will probably be willing to back it up at another trial. Certainly all of our readers would like to know whether such a run can be made.

One thing is certain: the reports of fast runs which we have made from time to time have had the effect to show many paper makers that they were not working their machines to their full capacity, and many of them have materially increased their daily product. The more paper each manufacturer can make without increasing his machinery or expenses, the better off he is—providing, of course, that he sells for more than cost, as everybody is supposed to do, and we expect to learn of a pretty general increase in the production of our mills, when it is deemed desirable. Let us hear what others can do now.—*Western Paper Trade*.

### Effect of Gas on Cotton Goods.

At the last meeting of the Chemical Section of the Philosophical Society of Glasgow, Dr. William Wallace, Gas Examiner and Public Analyst for the city of Glasgow, read a short paper on the destruction of the color of cotton goods by the sulphur in the gas burned in the London warehouses. Sulphuric acid, he said, was found in considerable quantity in the goods after being some time exposed, while the same articles in the fresh condition were quite free from that acid. In some cases the cotton fiber itself was rendered so tender as to be perfectly useless. The same thing had been observed in the warehouses in several large towns in England, such as Leeds, Manchester, etc., where common coal, containing much sulphur, was used as the source of the gas supplied to the consumers, but only to a limited extent. The remedy which was recommended by Dr. Wallace was the thorough ventilation of the warehouses, so as to insure that the sulphurous and sulphuric acids generated by the burning of the gas might have a sufficiently free escape into the atmosphere. He also suggested the free use of lime for white-washing the walls of the warehouses, so that the acid vapors floating in the more or less confined air might combine with the lime. He exhibited a number of specimens of the goods which he had examined after they had been sent back by the London merchants as damaged to the manufacturers. Both in color and in strength they were seen to have suffered detriment by exposure to gaseous fumes.

### Electrotypes of the Brains.

Among the novelties to be seen at the Paris Exhibition is a series of specimens of plated human brains sent by Dr. Ore, the ingenious Professor of Physiology at the Bordeaux School of Medicine. Dr. Ore has applied galvanoplasty for purposes of preservation to the brains of men and animals, and has obtained very remarkable results, the external surface presenting the hard brilliant surface of a metal, while the inner substance assumes the consistency of mastic, and is quite unalterable.

We are indebted to Mr. H. Pollock, photographer, of Baltimore, Md., for an excellent likeness of the late Thomas Winans.