

**EDISON'S PHONOMETER.**

It is admitted that there is power in the human voice, but hitherto this power has been applied indirectly to produce mechanical results.

Mr. Edison in his telephone and phonograph experiments discovered that the vibrations of the vocal cords were capable of producing considerable dynamic effect. Acting on this hint he began experiments on a phonometer, or instrument for measuring the mechanical force of sound waves produced by the human voice. In the course of these ex-

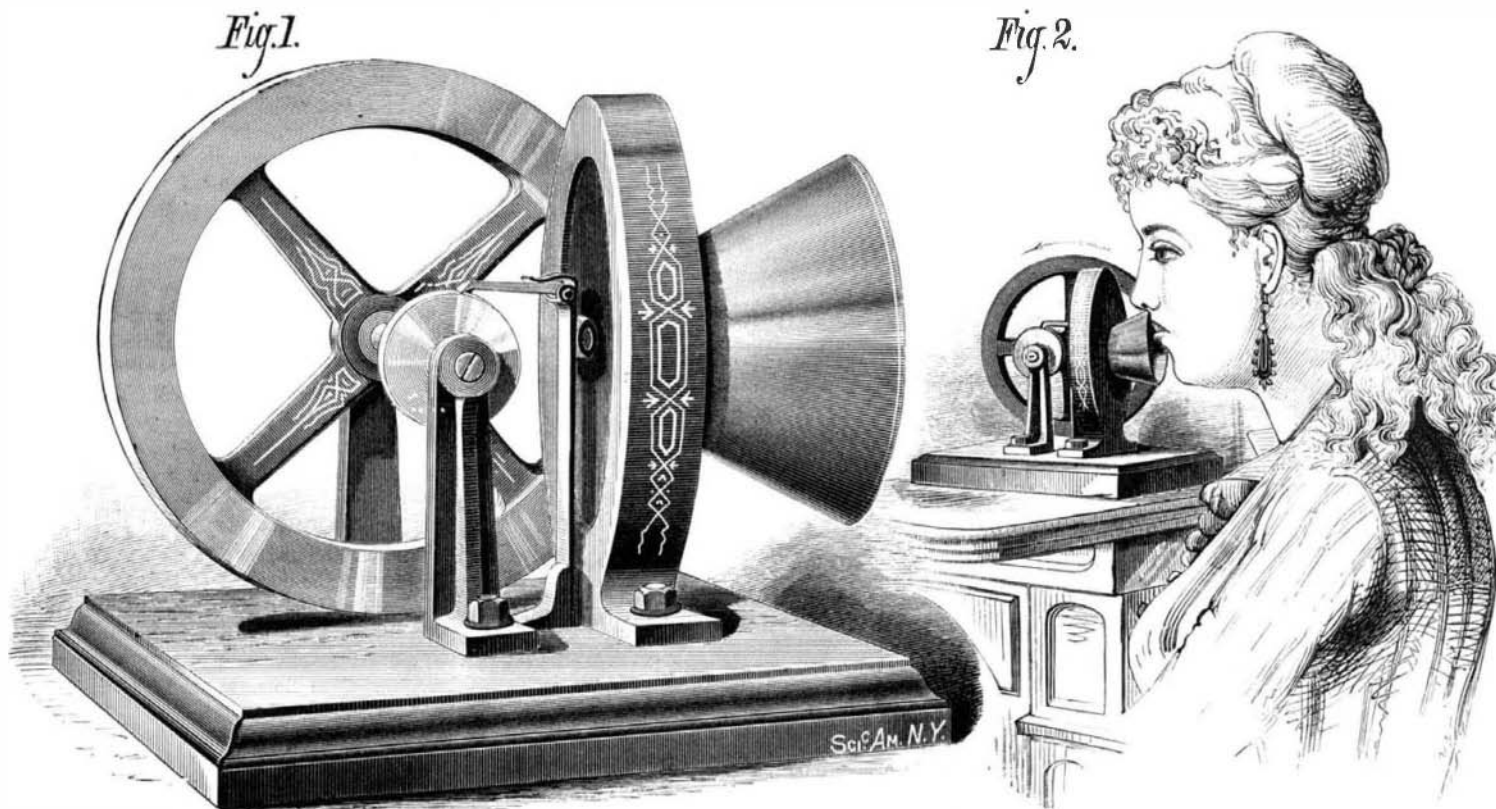
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ing pulled backward and forward between them. The scoop, however, cuts or fills only in one direction, and one of the engines is employed to do this work, the other engine being used only for pulling the loaded scoop to the point where it is required to deliver the spoil.

The scoop, as shown in the engraving, is in position for being filled. The scoop is drawn forward by the engine whose rope is coupled to the chain hanging from the scoop box. When the scoop is sufficiently full the man on the scoop gives the signal to the engine driver to stop pulling

which it has deposited is evenly spread by the mouth or cutting edge of the scoop box.

When the implement is far enough away from the place where the spoil has been deposited, the bolt is again withdrawn, the scoop box allowed to resume its middle position, the bolt shot in, and the scoop again run to the place where it left off work at the previous bout. The bolt is then again withdrawn and the box is pulled into position, and is ready for work as before. The implement is a useful one for many purposes, and in suitable situations can perform a



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The machine has a diaphragm and mouth piece similar to a phonograph. A spring which is secured to the bed piece rests on a piece of rubber tubing placed against the diaphragm. This spring carries a pawl that acts on a ratchet or roughened wheel on the fly wheel shaft. A sound made in the mouth piece creates vibrations in the diaphragm which are sufficient to propel the fly wheel with considerable velocity. It requires a surprising amount of pressure on the fly wheel shaft to stop the machine while a continuous sound is made in the mouth piece.

Mr. Edison says he will have no difficulty in making the machine bore a hole through a board; but we consider such an application of the machine of very little utility, as we are familiar with voices that can accomplish the feat without the mechanical appliance.

**EXCAVATING SCOOP.**

We give herewith a perspective view of an excavating scoop made by Messrs. John Fowler & Co., of Leeds, England, and represented by a model at their stand at the British Agricultural Machinery annex at the Paris Exhibition. This implement is one originally designed for making large ponds or reservoirs, 100 yards square and 25 feet deep, for Australian sheep farmers, but its successful employment for this purpose has led to other applications of it, and it is now used for other descriptions of excavating work and particularly for leveling land and constructing dams.

The scoop is worked by drawing it backward and forward between two steam plowing engines in the same way as the implements employed in the double engine system of steam plowing tackle, the engines being placed one on each headland, and the implement be-

and throw his engine out of gear. After this is done the signal is then given to the opposite engineman to start his engine, but before he does so the scoopman withdraws a stop from the tipping drum, which allows the latter to revolve. So soon as the engine exerts its power upon the rope, the drum revolves and also turns the chain barrels, round which are coiled the lifting chains, which are coupled to the sides of the scoop box, as shown in the engraving. The scoop box is thus caused to turn round its center; and so soon as the scoopman sees the box sufficiently clear of the ground and in position for carrying the spoil away he shoots the stop bolt into one of the notches in the rim of the tipping drum, and stops the action of the latter.

During the time this is going on (which is very short) the implement has stood still, but as soon as the tipping drum has been locked and becomes a rigid part of the frame, the engine pulls the implement in a backward direction to the requisite place for emptying. When within a few yards of the required position, the scoopman again pulls out the stop and the box is tipped over the rest of the distance it has got to travel to empty itself. The engineman is now signaled

very large amount of work. We take our illustration from *Engineering*.

**New Mechanical Inventions.**

An improved Fan Blower has been patented by Robert Waskey, of Blue Ridge, Va. It consists in a series of fans placed upon a shaft, and arranged so that the first fan in the series discharges into a chamber that communicates with the second fan in the series, and the last fan discharges into the pipe that conveys the wind away to be utilized. To increase the capacity of the blower, it is only necessary to add other fans, the speed at which it is driven remaining the same.

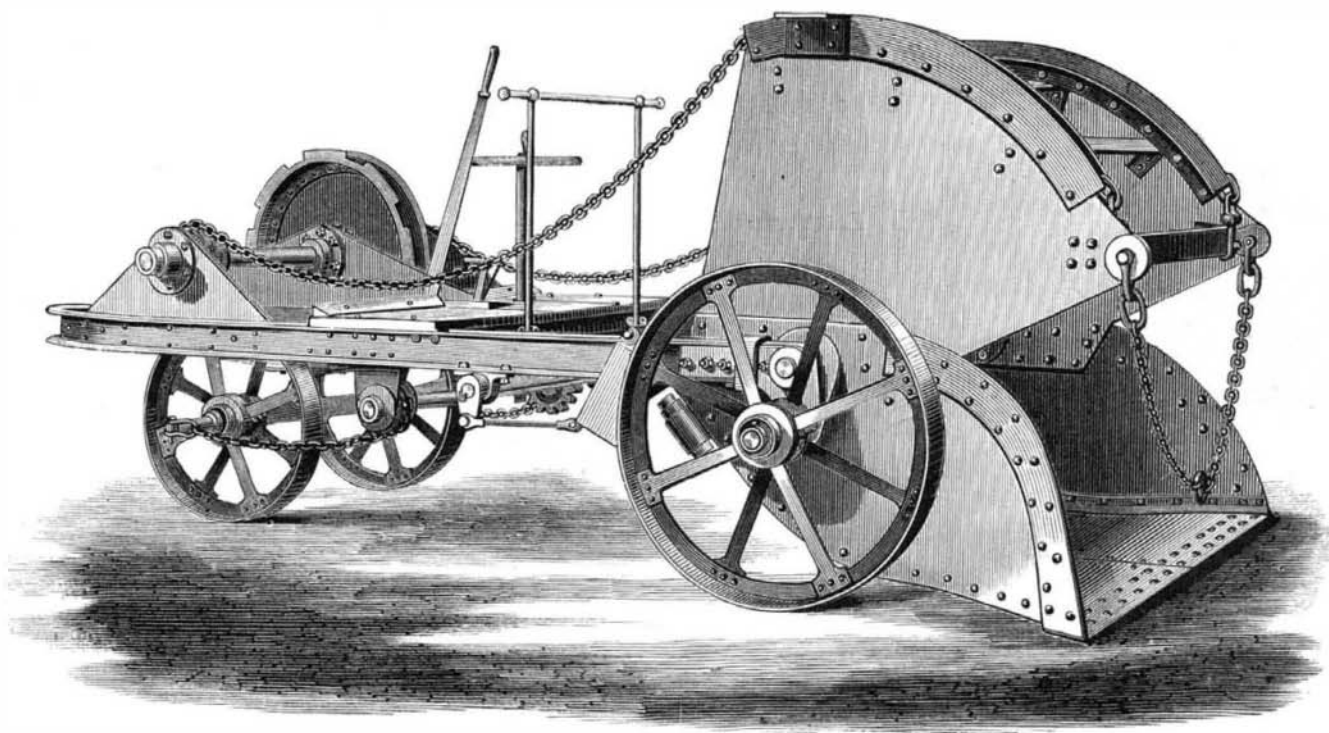
An improved Fare Register has been patented by Julius Bluemel, of San Francisco, Cal. This invention relates to a device for registering cash fares, and clipping and registering tickets; and it consists in a case having glass sides, and containing a clipping device, a bell which rings when the clipping device is operated, a registering device for recording each ticket clipped, and also a device for registering the cash fares.

James C. McIntyre, of Fort Edward, N. Y., has patented

an improved machine for preparing Wood Fiber for Paper Pulp, which is designed to prevent the formation of long and large fibers or splinters, so as to enable timber of any desired or convenient size or thickness to be operated upon. The timber is carried against the saws automatically, and the feed table is brought forward automatically (when one cut is completed) into proper position to enable the timber to be fed forward for another cut.

Wm. C. Howard, of Grahamville, S. C., has

invented an improved Machine for Hulling Rice, which is designed especially for family use, but which may be made of any desired size and capacity. This invention cannot be properly described without engravings.



EXCAVATING SCOOP.

to stop, the box being by this time in an almost vertical position. The engineman who drives on the filling side is next signaled to go on; and when the implement moves back again empty, the box being in a vertical position, the earth

An improved Station Indicator has recently been patented by Sabin W. Colton, of Philadelphia, Pa. The object of this invention is to provide an indicator for accurately indicating streets or stations. It is intended for street cars, and is designed mainly for the convenience of passengers.

Rudolph A. Stahn, of South Stillwater, Minn., has invented an improved Shingle Press, by which the shingles may be bunched, pressed, and tied with facility, the press being furthermore so constructed as to be readily taken to pieces, shipped, and set up again for work.

James T. Beckwith, of Cameron Mills, N. Y., has patented an improved Device for Leveling and Tramming Millstones while at work. This invention consists in combining, with a mill spindle, two spirit levels and an adjustable step, so that the spindle and stone may be regulated while the mill is running.

Thomas Boardman, of Charlottetown, Canada, is the inventor of an improved Machine for introducing, at one operation, into a length of stovepipe, all of the Rivets employed in fastening the pipe together. After the rivets are inserted they are set down by a hammer in the usual way.

Thomas B. Rogers, Jr., of Brooklyn, N. Y., has patented an improved Shutter Bower and Fastener, which consists of a plain rod jointed to an ear that is attached to the blind near its hinges, and fastened in a pivotal stud by a binding screw and plate attached to the window sill for receiving the said rod.

An improved Wind Engine has been patented by La Fayette Brayman, of Gilbert Station, Ill. The object of this invention is to provide a wind motor for the heavier kinds of work, such as pumping large quantities of water, operating stamp mills, and for other purposes, where an inexpensive power is required. The invention consists in two series of wind wheels, placed on horizontal shafts, which are arranged at right angles to each other, and are geared together, so that either or both series may be employed in driving machinery.

Pleasant A. Chalfant, of Independence, Cal., has perfected and patented an improved Newspaper Wrapping and Pasting Machine, which consists in a combination of devices for wrapping and pasting newspapers and pamphlets for mailing, which cannot be properly described without an engraving. The machine takes the papers from one table and the wrappers from another table, and folds the paper, pastes and applies the wrapper, and delivers the paper at the side of the machine ready for addressing and mailing.

#### Treatment of Acute Rheumatism.

At a late meeting of the Glasgow Medical Society, Dr. Charteris reviewed the various modes of treatment of acute rheumatism which had been practiced, from the comparatively moderate venesection of Sydenham down to the more modern methods. Among these latter he specially adverted to the mode of blistering in succession the affected joints, and giving alkalies to neutralize the acid produced in the course of the disease. This was an improvement on former methods; it shortened the disease by ten days, and heart complications were believed to be reduced in frequency. The treatment by salicin or salicylic acid was then introduced, and this he looked upon as the best treatment for acute rheumatism at present known, and of the nature of a specific. Relief was experienced in from thirty-four to forty-eight hours, and the temperature also fell. Heart complications were not averted, except indirectly by the arrest of the disease. If the disease was very acute, with severe head symptoms, they must not trust to the salicylates, but to cold baths. Experience had led him to the conclusion that salicin should not be continued after the temperature reached 99°. If continued longer it exercised a depressing effect.—*Medical and Surgical Reporter.*

#### How a Horse Trots.

By means of a series of cameras standing one foot apart and operated by electricity, a California photographer, Mr. E. J. Muybridge, has succeeded in taking negatives of every phase of a trotting horse's action while making a complete stride. In this way it becomes possible to study the successive positions of a horse's body, legs, and feet while he is going at full speed. The horse photographed was Mr. Leland Stanford's trotter Occident, while traveling at a 2:24 gait, with a stride of 18 feet 6 inches. The San Francisco *Bulletin* reports that the photographs show the fast trotter's feet to be all off the ground together twice during the making of the stride, contrary to the assertions of the authorities hitherto accepted.

#### Danger of Carbolic Acid Dressings.

A sort of reaction against the use of carbolic acid for antiseptic dressings seems now to be imminent, notwithstanding the brilliant success it has met with in Germany in the hands of Dr. Lister and others. According to the *Pharmaceutical Journal*, Dr. Kuester, at the late meeting of the German Surgeons' Congress, in Berlin, delivered an address on the toxic effects of carbolic acid dressings, in which he stated that within the last three years he had seen five cases of such poisoning, four of them terminating fatally. He expressed his belief that from the uncertainty of the symptoms shown in such cases, many might have been mistaken as cases of collapse or shock. He found, from experiments made on dogs, that 0.076 per cent of the body weight constituted a fatal dose of carbolic acid; but small animals and persons in weak health, or faint from loss of blood, were liable to be affected by smaller doses. He had found the antidote of Sonnenburg,

sulphate of soda, to be of value only in lighter cases, and such as were of a less acute character. Professor Koenig, of Göttingen, who at the same meeting advocated permanent irrigation in all cases of an already established sepsis of wounds, recommends exclusively a solution of salicylic instead of carbolic acid.

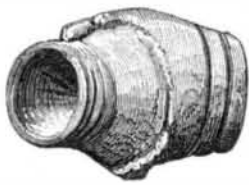
The last report of the Berlin University Surgical Clinique contains an account of the death of a child three years old from an acute carbolicism after the application of carbolic antiseptic dressings, consequent upon an osteotomy on the leg. The use of such dressings, however, has now been discontinued altogether at the Berlin Surgical Clinique.

### Communications.

#### Welded Union and Rebel Bullets.

To the Editor of the *Scientific American*:

I hand you herewith a curiosity in the shape of a Rebel and a Union bullet impacted in the air, which was picked up on the field during one of the numerous engagements between the Rebel forces and those of General N. P. Banks, at the time of the latter's retreat toward the Mississippi river after having been defeated in his attempt to capture Shreveport, La., in the summer of 1864. I was at that time Lieutenant Colonel Commanding the 47th Regiment, Indiana Veteran Volunteers. A portion of the regiment was deployed as skirmishers, with the main body following four hundred



yards in the rear, marching by the flank. These two bullets were impacted in the air at a point between the skirmish lines of the opposing bodies, and carried to the rear of our skirmish line, where they fell, like a spent ball, near the head of the column of the main body of the regiment. Drum Major Craig, of my regiment, seeing the object fall to the ground quite near him, picked it up, supposing it to be a spent ball, but instead found it in the precise condition in which you now see it. He afterward presented it to me as a token of friendship and a memento of the events through which we were passing.

The larger bullet is the Rebel ball, which is known by the fact that it is of 0.68 caliber, of which the Rebels had a large number, and the Federal forces in the engagement had none larger than 0.57 caliber, which is the caliber of the smaller bullet. It is supposed that the larger bullet had traveled a less distance than the smaller at the instant of the impact, and possibly it was fired with a superior quality or quantity of powder; and this, together with its weight, had the effect of driving the smaller bullet back beyond the line from which it was fired.

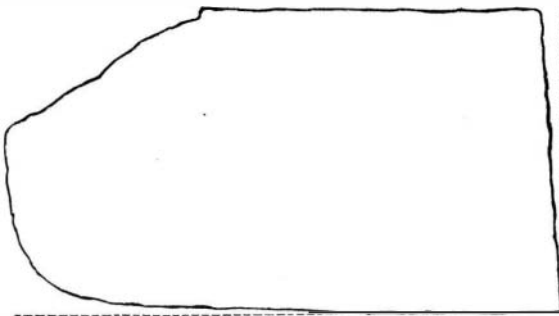
JNO. A. McLAUGHLIN,

Late Lt. Col. Commanding 47th Ind. Vet. Vol.  
Topeka, Kansas.

#### Indicator of a Steamboat Engine.

To the Editor of the *Scientific American*:

I send you an indicator card taken from one of our best Western steamboats, the Idlewild. This boat has made the best time that has ever been made on the Ohio river, running from Cairo to Evansville (200 miles) in 15 hours and 29 minutes. As the application of the indicator to boats in



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the West is something new, we would like to see something from some of our engineers of Eastern boats on this subject. The above card was taken from the after end of the starboard engine; diameter of cylinder 22½ inches, length of stroke 6 feet 6 inches, speed of engine 18 revolutions per minute, steam pressure 138 lbs.; puppet valves.

J. W. P.

[The card indicates that the valves are not set in the best manner possible, the admission of steam being rather late, and the exhaust not being as free as could be desired. A slightly shorter cut off might also be desirable. We hope some of our readers will send us cards for comparison.—EDS.]

#### A Remedy for the Effects of Poison Ivy.

Dr. S. A. Brown, U. S. N., states in the *Medical Record* that he has found a specific to the troublesome eruption produced by the poison oak or poison ivy (*Rhus toxicodendron*) so common in our woods and so often mistaken for the Virginia creeper, which the plant somewhat resembles. This specific he finds in bromine, which he has used with unvarying success in at least forty cases. He uses the drug dissolved in olive oil, cosmoline, or glycerine, in the strength of from 10 to 20 drops of bromine to the ounce of oil, and

rubs the mixture gently on the affected part three or four times a day. The bromine is so volatile that the solution should be renewed within twenty-four hours from its preparation. The eruption never extends after the first thorough application, and it promptly disappears within twenty-four hours, if the application is persisted in, and the patient is entirely cured.

#### Thymol.

The employment of thymol as a substitute for carbolic acid in surgical dressings is, says the *Lancet*, a natural consequence of the discovery of its greater antiseptic and less septic power. A lecture on the subject has been published in Volkmann's series by H. Ranke, of Halle. The solution used instead of the 3 per cent solution of carbolic acid consists of one part thymol, ten parts of alcohol, twenty of glycerin, and a thousand of water, and can be employed as either a spray or a solution. An impregnated gauze is also used. Since thymol does not irritate the wounds, the gauze may be laid directly upon it; otherwise the same method is employed as in Lister's plan. If the gauze becomes hard and dry it may be moistened once or twice a day with thymol water. In order to prevent the evaporation of the thymol from the dressing, the gauze is covered with oiled paper. From an experience of forty-one wounds dressed with thymol the lecturer concluded that the method leaves nothing to be desired as to its antiseptic effect, and that it answers better than the carbolic acid dressing, since the secretion from the wounds is less, the period of healing shorter, and the cost of the dressings is smaller. Further it has no poisonous properties, and eczema was never observed in its use.

#### American Institute Exhibition.

The Managers have added three medals to the list of awards for the coming exhibition. They are "The Special Medal," "The Medal of Superiority," and "The Medal of Excellence," making in all six grades of medals, four grades of diplomas, and the usual money awards for "perishable products," as flowers, fruits, etc. "The Special Medal" will be offered for certain specified exhibits each year, and each year changed. For the Forty-seventh Exhibition, 1878, which opens September 11, the following articles only can compete for this award: An approved system of sewer and watercloset ventilation, an approved sewer trap, an approved system of refrigeration as applied to the preservation of perishable food products, an approved system and apparatus for warming dwellings, a method of propelling railway cars by steam or other motive power, blankbook writing papers, a method of automatically opening and closing hatchway doors in connection with elevators, and a system of illuminating buildings, etc., by electricity. For particulars and blanks address General Superintendent, New York city.

#### Copper Oysters.

An observation recently made by M. Balland on copper in oysters is interesting. A number of so-called Portugal oysters, sent from Oran to Orleans in March, showed a remarkable green coloration. On being pressed against the palate they left a sensation of bitterness or tartness, and when placed in contact for some time with a well cleaned plate of iron they deposited a thin red layer of metallic copper. M. Balland sought to determine the amount of copper by precipitation with an electric current; two oysters (without their shells) having been triturated and placed in a sulphuric acid solution, in sixteen hours 6 milligrammes of copper were deposited, and several other experiments gave this amount of about 3 mgr. for each oyster. Of the persons to whom these oysters were sent some rejected them on account of their color, others took them, and without any injurious consequences.

#### The Use of Antimony in Batteries.

Mr. R. J. Munn calls the attention of electricians, in the *Journal of the Society of Arts*, to the use of antimony as a negative element to replace carbon in some galvanic batteries where sulphuric acid is used as the exciting fluid. This metal, after a trial extending over five years, he claims has yielded most excellent results. Among its advantages, he mentions its low price, the absence of scaling and disintegration, and the fact that galvanic action begins almost immediately on immersion. The well known defect of brittleness of antimony when used in thin plates is overcome by Mr. Munn by casting the metal on a core of copper, or by alloying it with a small percentage of some other metal. Antimony perhaps does not form as perfect a negative element as carbon, but its great conductivity and its other qualities may render it valuable in many cases.

#### Photographs on Silk.

Messrs. Allard & Guyot, silk manufacturers of Lyons, are introducing a new industry—the production of photographic impressions on stuffs. They sent to a recent meeting of the Photographic Society several pieces of silk, with a variety of photographic pictures printed on them—among others, some large medallions representing pictures of the old masters. These specimens are no less than forty meters in length. The process by which they are produced is not given, but there is reason for believing that the prints are made with salts of silver. But, however that may be, this application of photography, which ever since the discovery of the art has been sought after, and made the object of numerous more or less successful experiments, appears now to have been successfully realized in the hands of Messrs. Allard & Guyot.