

Scientific American

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Paine's Electric Light.

About two months ago, almost all the papers throughout the country were giving flaming and highly colored accounts of Paine's Electric Light. Since the report of the Scientific Committee has been published, they have taken another tack, and are now just as strong in their abuse as they were before in their praises. This whole subject has been discussed long ago in our columns, between Mr. Paine and a correspondent under the cognomen of "Carburetted Hydrogen."

We will now go over the history of the wonderful *Light*, and throw some *light* on the subject. Mr. Paine sent us a circular dated Worcester, Mass., Nov. 29, 1848, announcing that by "Mechanical Action" he had produced a light equal in intensity to that of 4,000 gas burners of the largest bat's wing pattern, with an apparatus occupying four square feet of room, at a cost of one mill per hour, the only materials consumed being water and lime. "I am now engaged," he says, "in making an apparatus which will be completed this winter and its parts submitted to public inspection, except the interior of the generator." The object of the circular was stated to be an announcement to the different scientific bodies of Europe and America to allow any other person who had made a like discovery, to establish his prior claim. This circular is published on page 101, Vol. 4, Sci. Am.; it is worth looking at. We stated at the time our unbelief in the alleged discovery. On page 117, same Vol., there is an answer of Mr. Paine to our comments, stating that his light would announce itself from the Cupola of the Worcester Exchange, for some nights, in the month of January, 1849. We again took the opportunity to prove by figures that he was wrong—entirely wrong—in his calculations. After this no notice was taken of the alleged discovery by us for a long time, although we saw quite a number of flying paragraphs in other papers, and received some very curious letters about it.

Oct. 1st, 1849, Mr. Paine sent us another letter, which we published on page 28, this Vol., Sci. Am. In it he announced the perfect success of his "Hydro Electric Light," according to his issued circular, "that his light had been burning on a large scale for months, without any person to dispute the originality in point of time or fact. In that letter he also stated that one of his discoveries, viz., "the condensing of the electric fluid, as we do the atmosphere, until the vessel bursts, should remain undisputed." That letter is worth reading again, and we request our readers who have kept their papers to do so. He was to come a short time after that to this city and exhibit the experiment, but neither that promise, nor the one implied in his first circular, has been fastidiously adhered to. On page 61, a correspondent took up the cudgels against Mr. Paine's discovery, and treated it with a great deal of chemical knowledge. The objections against Mr. Paine's light, in that communication, was stated to be the want of illuminating power in the hydrogen, and that the hydrogen required carbonic gas to make a good white light. This was the first check move to Mr. Paine's beautiful light *made from water*. Mr. Paine answered that letter on page 85, *virtually* asserting that his light was made from water alone, and announcing that he had discovered water to be a simple substance.—Had the author of the long article in the N. Y. Dispatch, June 23, on this subject, been aware of this fact, he never would have wasted so much argument to prove a possibility by disproving it. On page 93 the same correspondent answered Mr. Paine's letter (on page 85) in a masterly manner, and demanded of Mr. Paine proof of the chemical principles alleged by him, of producing a white light from hydrogen. That letter is worth re-reading. Mr. Paine answered this by a curt reply, page 98, denying that he ever stated having produced a white light by the *simple combination* of hydrogen. This was an *ambiguous* reply, and only that.

On page 158 the same correspondent—signing himself "Carburetted Hydrogen," reviewed Mr. Porter's letter published in the Washington Union, and went over the whole history of gas illumination, exposing Mr. Porter's ignorance of chemical science.

On page 203 there is a long and able letter from Mr. Paine, on the subject, wherein he reiterates his former statement, that he had resolved water entirely into oxygen at the one pole, and entirely into oxygen at the other. This letter of Mr. Paine is worth reading—careful reading. We would most respectfully state, that in a number of experiments, we have utterly failed to resolve water entirely into a simple element like Mr. Paine. His new discovery, we believe, must always remain his own property.

Well, after all that has been said and done, it comes out at last, driven out by our correspondent, that Mr. Paine uses carburetted hydrogen. In a letter published by Mr. Paine in the New York Herald, June 20th, it is stated that the hydrogen gas passes through turpentine, and is carbonized—made into carbonated hydrogen. Here, then, he is driven to the admission, carefully concealed before, that his gas is *hydrogen carbonated*. Now, we don't believe that the passage of hydrogen through a bottle of turpentine will absorb the full equivalent of carbon from the turpentine to produce a good light. The law of gas absorption is no doubt a most remarkable one, but it possesses no such mysteries as those pretended by Mr. Paine. The certificates which he publishes are of no earthly value whatever to a scientific man, however respectable the names attached. It is wrong for any respectable man to lend his name for any purpose, to influence public opinion respecting something of which he is kept ignorant himself. It makes no matter how cheap hydrogen may be produced (but it cannot) a great amount of carbon is required to make it *good gas*, whether derived from turpentine or some other substance, and then it cannot be cheap. We therefore state again what we stated nearly two years ago, that this alleged discovery is a downright error. To make good illuminating gas it requires about three of carbon to one of hydrogen, and any man who makes good illuminating gas, must get his carbon somewhere, and it is all sheer nonsense to say that it can be got for a mere song, except it may be derived from some natural subterranean reservoir. We do not wish at present to say anything about the report of the Scientific Committee, or any of the controversial articles published out of this paper; the errors of Mr. Paine's alleged discovery were pointed out long ago in our columns, and every new development is but proof upon proof of the correctness of the views therein expressed. If Mr. Paine is right, it is very easy for him to prove himself pure in all he has said. If not, with our feelings about such things, we would rather hide under a toad-stool for ever, than face the public.

Short Review of Gillard's Electric Light. Gesner's Light.

Last week we published the specification of M. J. P. Gillard, of France, describing his new methods of producing gas. The specification is very vague, but there are one or two points clear enough to the man of science, so as to understand their nature.

First,—He decomposes water by letting it fall on iron at a white heat, when the oxygen combines with the iron and the hydrogen is set free. This is an old and well known process.

Second,—He produces hydrogen by making steam pass through a gas retort, the same as those used in our gas works. The hydrogen passes off along with carbonic acid into an empurator. This plan is worse than useless for any good purpose. He also produces hydrogen by revolving magnets generating a current of electricity, which decomposes the water. The cost of the mechanical power to do this will be far more expensive than merely to use the gas produced direct from purified coal gas. There is one thing new and apparently good, however, in this invention,—it is the burning of hydrogen to make a clear light.—Although it will not produce a light like coal gas, yet the discovery is a very beautiful one.

It consists in passing a small jet of hydrogen through a burner of an exceeding fine bore or slit on to a thin strip of platinum, made into fine threads, to answer the purpose of a fine wick. The platinum threads are heated to such whiteness as to produce along with the burning hydrogen, a brilliant light. It is well known that hydrogen produces a most intense heat in burning, but not a good light. This invention, as a philosophical one, is very interesting; but carburetted hydrogen can be produced cheaper than pure hydrogen. In an economical point of view this invention, therefore, will not come into public use. Another part of the invention is to inject steam by a perforated pipe into a locomotive, and other furnaces, to produce an intense heat. This is not exactly new, whether there is any economy in employing a small jet of steam into a furnace or not, we have no sufficient data of experiments to decide. We have heard one assert that there was economy in the plan, and another deny it. The revolving magnets to decompose water, is an invention which will cost more than it can make, and as economy is the grand object, we must wait with patience for some other light. If water, like coal, could be thrown with but very little trouble into the same state as ignited carbon, then we would have a grand source of cheap light and heat, but we have no hopes of such a discovery being made in a hurry.

The most beautiful new discovery that we are acquainted with, at present, to produce light, is the Hydro-Carbon Asphalt, patented by Dr. Gesner. It contains no sulphur, and requires no purification. We have seen the gas made from it, and soft beautiful gas it is. The asphalt, as analyzed by Drs. Jackson and Chilton, contains about 50 per cent. of volatile matter and 50 of pure carbon. It is an excellent discovery, one which—without any secret chambers—has been exhibited to a number of scientific gentlemen who could appreciate its importance. With six pounds of this hydro-carbon, 35 cubic feet of gas was obtained, which was very dense—one burner being equal to 25 candles—consuming 2 1-10 cubic feet per hour. The apparatus to make it is so cheap and simple, that any person can buy and manage it for private families. It is a most admirable invention.

Important Railroad Suit.

An action was brought by Ross Winans, of Baltimore, Md., against the Troy and Schenectady Railroad Co., in the June term of the U. S. Circuit Court, Northern District of New York, Canandaigua, for the violation of a patent granted to him Oct. 1st, 1844. The subject matter of the patent is the eight-wheel passenger and burden car in general use on railroads throughout this country. For the defense it was contended that the patent was void for 1st, the want of novelty; 2nd, for an imperfect specification; 3rd, for an imperfect claim; 4th, for the want of a legal compliance with the statute, and 5th, on the ground of abandonment. To prove the first two points several English scientific works were brought forward, and numerous railway engineers, superintendents and *experts* living in Washington, Boston, New York city, Auburn, Buffalo and Batavia, gave in their testimony. The trial occupied the attention of the Court during eight days, and was finally given to the Jury after an able charge from his honor Judge Conkling, on Friday evening. After a short absence they came in with a verdict for the plaintiff. The trial was regarded as a test case between the plaintiff (patentee) and the railroad companies, it being agreed among the several companies of this State that they would mutually aid and jointly bear the expense of the defense. For the plaintiff, Hon. J. A. Spencer, Charles M. Keeler and Samuel Blatchford, Esqs. For the defendants, Hon. S. Stevens, David Buel, Jr., and A. Worden, Esqs.

We are heartily glad to see how this case terminated. Had Mr. Winans been a poor man, the combination of wealth against him would have crushed all his efforts to obtain justice. We hold all those corporations as no better than pirates, who knowingly plunder the inventor of his just rights. Just think of the

combination arrayed here against an honest practical mechanic and inventor, and reflect for a moment upon the great amount of expenses incurred for counsel in this case, and it will at once become obvious to any man that the great over-topping wall of difficulties which the poor inventor has to leap, is that of the *law*—the dollar draining law, in the cases of contested infringement. Who can devise a proper remedy for these things?

Hall for Inventors.

By the last week's "Farmer & Mechanic," we learn that a call is made for a Convention of Inventors at the Hall of Mr. Dunning, at the corner of Washington and Courtland streets, New York, to be held in August next. Mr. Dunning is to keep a Hall and exhibit models, &c.: all this is good, and we have nothing to say against it; but there is one statement in the circular which we believe to be a downright error; it is this:—"When a patentee arrives in New York, the artful and designing come to his aid in the garb of disinterested friends, and in a few days he finds himself involved, and in too many instances he conveys a portion of his title to his letters patent for a mere pittance, and there are other instances where he has been defrauded out of the whole entire right, title and interest, and left destitute of the means to convey him to a desolate home."

We unhesitatingly pronounce these statements untrue. Many inventors have been wronged, deeply wronged, but in the city of New York we do not believe there is a man with soul so dead to honesty as that represented above. If there is, let us have his name. Not to give his or their names after making such charge, implies a want of candor. We do not know who the author is of the circular making such statements, but a circular inviting inventors to send specimens of their inventions, is signed Smith Dunning, N. Y.; M. P. Coon, Lansingburg, N. Y., Abner Chapman, Fairfax, Vt.; Isaac T. Grant, Schoytelcohe, N. Y.; James Black, Philadelphia, Pa.; C. S. Scripture, Chas. Henry, J. P. Martin.

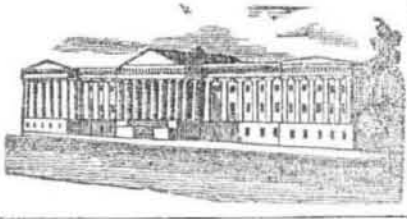
Now, gentlemen, we say if you know any person or persons who have deceived and defrauded inventors as stated in the circular to which we refer, come out like candid, true men and give the public their names and circumstances of the cases. Until you do so, we must incline to the opinion we have heretofore expressed, and so will the public. There are a great many bad men in New York, but no more to its population than any other place—if as many.

We would like to ask Mr. Chapman, with whom we are personally well acquainted, to point us to a single case where the patentee has been defrauded in this city to the extent above mentioned. We assure him that our columns are open to the expose of such villainy, and we will do it upon our own responsibility when we are convinced of its truth. We know Mr. Chapman to be an honest inventor, and he has no doubt met with injustice; but we are confident he will admit that he has met more injustice in places further south than he has in New York city.

Steam and Water Engine.

One of our cotemporaries publishes an advertising engraving of a new machine for knocking the steam engine into a cracked cracker, in the shape of forcing steam into a vessel of water in which is a water wheel. The description says "a jet of steam is thrown into the conical tube, carrying with it and introducing therein, simultaneously, a certain quantity of atmospheric air by the momentum whereof buoyancy and motive power is given to the wheel." Is not this very funny for the *quid nuncs*—those gentlemen of the P. O., who granted a patent for it. A steam wheel is illustrated on page 208, Vol. 4., Sci. Am., and if any one wants to know about its antiquity, we refer him to "Hebert."

A petition has been presented to our Common Council, by a company, to lay a double rail track through some of the streets, to supersede omnibusses. This project has called forth flaming handbills against monopoly. No names are signed to them.



Our weekly List of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE.

For the week ending July 2, 1850.

To E. Barstow, of New York, N. Y., for improved method of fitting the bows of vessels.

I claim making the rear edge of the cutter to project on each side of the stem, to form a recess on each side, substantially as described, in combination with the sheathing pieces which fill up such recesses, and which cover and protect the ends of the plankings, and which also admit of giving better lines for the passage of the bow of the ship or other vessel through the water, substantially as described.

To Ernst Backup, of New York, N. Y., for improved method of distributing the air over the heating and cooling surfaces of air-engines.

I claim causing the air entering and leaving the cylinder to pass over the heating and cooling surfaces in a thin stratum, by means of plates or their equivalents, substantially in the manner and for the purpose set forth.

To C. C. Cameron, of Harper's Ferry, Va., for improved sash stopper.

I claim the triangular shaped double acting wedges or fasteners, placed within recesses of corresponding shape, formed in the front or rear sides of the sash side bars (or in the side slats of a window frame) acted upon by any kind of handles or levers in such a manner that they will press the sashes inwards or outwards, in contradistinction to sideways, and thus retain them in any desired position, and render them air-tight within the window frame.

To R. Daniels, of Woodstock, Vt., for improvement in Straw Cutters.

I claim the method of feeding straw, fodder and other substances, to a series of rotating cutters by means of a continuous motion by a roller armed with pointed teeth and hung in a swiveling frame, substantially as described.

I also claim the method of cutting straw, fodder, and the like substances, by means of the cutting cylinder, provided with cutters, the outer faces of which, from the cutting edge, are curved or inclined in towards the axis, so as to admit of continuous feed, the blades of the cutters acting as gauge plates for the length of the cut, in combination with the feeding the straw, fodder, or other substance to be cut, by a continuous motion, substantially as set forth.

To J. E. Erb, of Baltimore, Md., for improvement in the feeders of a Straw Cutter.

I claim the guard piece, in combination with the feed rollers, to carry the straw or other material to the cutters, as described.

To J. Hibbs, of Bristol, Pa., for improvements in setting the teeth on the concave of a clover thresher.

I claim the right to use and manufacture machines for the purpose of threshing and hulling clover and other seeds of a similar nature, having the teeth of the concave, or the stationary set of teeth so inserted in leather on a bed of cork, as to give them an elasticity sufficient to cause them to resume their original position when misplaced by the passage of any foreign substance which may be introduced by accident or otherwise into the machine.

To H. Knowles, of Washington, D. C., and H. C. Bevington, of Holmes County, Ohio, for improvement in the cutters and rakers of a Grain and Grass Harvester.

We claim, first, making the pointed cutters concave on the faces toward each other, in the manner and for the purpose set forth, by which the cutters are rendered self-sharpening and bending the upper plate over the back of the

lower or sliding cutter plate, and bringing the notched or turned edge against the lower plate in the manner and for the purposes described.

Second, the arrangement of the stationary cyma reversa fingers in combination with the vibrating hook teeth or claws, bands and the appendages for operating the same, by which the grain is collected into sheafs or gavels, before being discharged upon the ground.

Third, The combination of the hook teeth or claws, rock shaft, bent arm, lever, spring and revolving arm for arresting the grain whilst removing the gavel or sheaf from the cyma reversa fingers on to the ground, as described.

We likewise claim the combination of the pinion, perch and axle, the former working into the segment on the front axle-tree, for steering the forward part of the frame and cutters.

To B. J. Lane, of Cambridge, Mass., for improvement in Respiring Apparatus.

I claim a valve made of any metallic substance, and a nose-piece having an air-tight tube surrounding that part which is designed to fit about the nose to accommodate the features of any person, and the use of these together with a cylinder vessel, air-chamber, or bag, for the purpose of enabling a person to breathe with perfect ease, air which has been condensed more or less in any such cylinder vessel, air-chamber or bag, which is to be confined to the person of the wearer while the surrounding air is impure from any cause.

To John Locke, of Cincinnati, Ohio, for improvement in collimating levels.

I claim the mode substantially as herein described of forming a levelling instrument by combining the spirit level with the collimator having a partial lens, viz., by means of a partial reflector so placed as to reflect both the cross wire and the spirit level bubble in such manner that the image of the latter may be seen bisected by the image of the former when the instrument is horizontal, the image of the cross wire being at the same time seen in optical contact with the distant point which marks the level with the observer's eye.

To J. R. Miller, of Fredericksburg, Va., for improved re-immersing amalgamator.

I claim the combination of the revolving basin and its attached tubes or spouts with the trough containing mercury, the tubes having sufficient length to force the issuing currents to the bottom of the mercury, or nearly so, and their discharging orifices being above the surface of the mercury, which latter peculiarity causes the streams as they pass and enter in succession, to force below the surface any particles of metal which may not have been amalgamated by the first immersion.

To L. Moore, of Bart, Pa., for improvement in the seeding apparatus of seeding-apparatus.

I claim, first, the employment of a reciprocating sliding gauge plate, when said plate is provided with oblique feed openings, in combination with openings in the grating plates of different obliquity and bottom of the hopper, for increasing or diminishing the quantity of seed to be sown while the machine is in motion, by adjusting the end of the connecting rod nearer to or farther from the fulcrum of the vibrating bar, and thus increasing or diminishing the traverse or sliding movement of the gauge plate.

Second, I also claim the combination of the hooked connecting rod, arm, vibrating plate provided with a series of holes (arranged in the arc of a circle scribed from the pivoted end of the rod) and undulatory cam, with the reciprocating sliding gauge plate, by which the reciprocatory movement of the sliding gauge plate is regulated for the purpose of increasing or diminishing the feed or sowing of the seed.

To J. Nock, of Philadelphia, Pa., for improved lock bolt for shutters.

I claim the bolt having a slot through which the key passes, which will admit the bolt to be moved back sufficiently far to prevent the spring catches from catching in the notches in the bolt in combination with a key hole in the guard, which renders it necessary to remove the key before the shutters can be opened substantially in the manner and for the purpose set forth.

To J. Peirson, of Wilmington, Del., for improved arrangement of cutters in a grain and grass harvester.

Having thus fully described the nature of my improvements in mowing and reaping machines, I claim the arrangement substantially as described and represented, of cutters bolted to an endless belt, revolving in a vertical orbit and moving on a rail, guarded and disposed after the manner described.

To J. W. Pepper, of Salem, Mass., for improvement in machinery for cutting lozenges.

I claim the adjustable spring fingers connected to the two wheeled car, said car being appended to an axle of the revolving cutters—the wheels and the screws that fasten the finger plate to the transverse bar preventing the finger plate from touching the sheet of paste during the operation of cutting the lozenges therefrom, as herein fully set forth.

To S. H. Ransom, of Albany, N. Y., for improvement in the construction of cooking stoves.

I claim making the fire bottom and front hearth, or summer arrangement of the class of stoves herein specified, in one piece, connecting the two with inclined plates placed within the front plate of the stove, substantially as described, whereby I am enabled to have the hearth below the level of the fire-bottom, whilst the inclination given to the connecting parts are visible, thereby effecting the purposes herein specified.

I also claim the above method of making the hearth and fire bottom in combination with the method of connecting them with the oven bottom and stove bottom by means of tongues and grooves, whilst the fire bottom extends under the fire back, substantially in the manner and for the purpose specified.

And I also claim in combination with the above described method of making the hearth and fire bottom, the extension of the front stove plate down in front of the parts which unite the hearth and fire bottom, the said front stove plate being provided with projecting pieces to rest against the inclined joints to aid in securing in place the said united hearth and fire bottom, substantially as described.

To F. Stewart, of Philadelphia, Pa., for improvement in safety-tubes for lamps.

I claim the application or addition of inner pipe or pipes (one or more as the case may be) inserted into a piece of metal or other material as before described, being either stationary or revolving, thereby preventing the top of the lamp from being removed without drawing it over the inner pipe or pipes, and thus extinguishing the flame.

DESIGNS.

To J. Crandall, (Assignor to E. Johnson & D. B. Cox) of Troy, N. Y., for design for stoves.

Scientific Memoranda.

A cement that will neither crack nor crease, may be made with a solution of pearlsh and sulphuric acid, mixed to the exact point of neutralization with powder of gypsum.

All beams have a greater resistance when firmly fixed than when merely supported at their ends, the proportion being as 3 to 2.

Lenz has ascertained by actual experiment that electricity is as capable of producing cold as heat, to the degree of freezing water rapidly.

Frost cannot penetrate through a thick covering of snow, below a sheet of ice, or through a covering of grass on pasture, all of which act as non-conductors.

The wild pine of the West Indies, which grows on the branches of trees in hot climates, where there is little rain, has a mug which will hold a quart; when the dew falls it is received, and a valve closes at the top and prevents evaporation. Often are birds seen to insert their beaks and procure water therefrom.

One of the common methods of making saleratus is to suspend the carbonate of potassa in suitable vessels over the fermenting liquor in distilleries and breweries, but it is proposed to impregnate the salt by means of the carbonic acid from anthracite coal, as a readier method of effecting the desired end.

The forces of compression and extension are equal within the elastic limit, and consequently a triangular beam, provided it is not loaded beyond that limit, will have the same amount of deflection, whether the base or apex be uppermost, and a flanged beam the same deflection whether the flange be at the top or bottom.

Sheep may be fed on horse-chestnuts; in Switzerland the chestnuts are bruised in a machine for the purpose, and two lbs. of them given to each sheep morning and evening, a little at a time. They impart a rich flavor to the mutton.

Scientific experiments show that the increase of resistance from the atmosphere is in a higher ratio than that generally received, viz., the square of the velocity; for while the squares of the velocity increase in the ratio of 100 to 107, or 7 per cent.; the resistance is increased in the ratio of 100 to 115, or 15 per cent.

To cure a felon, take some flour and mix it with cream into a paste and put it on as a poultice: then lance it when ripe.

The phenomena attending the extinction or cessation of life by submersion in water, render it impossible to say at what distance of time after submersion the attempts at resuscitation will be fruitless. In a late case of drowning, after four hours of indefatigable exertion, animation was so far restored that the individual was able to articulate.

The paper making of the wasp shows instinct to be as great in manufactures as the honeycomb proves it to excel in architecture. The wasp makes a paper as excellent as any paper maker in its line; and she has for sixty centuries been acquainted with what was only discovered by men between five and six centuries ago. She makes two kinds of paper, the white and the brown; and the white takes the ink as well as if it were sized.

In a fine dry climate the sky is of much deeper blue than we ever behold it in this country, and at the tops of high mountains, above the misty exhalations of the earth, the sky appears of a still deeper color. If the air was perfectly transparent the sky would appear almost black.

The fresh leaves of the cabbage contain from 90 to 92 per cent of water.

The expense of fuel to do the same amount of work with steam engines now, is only one-third of what it was in 1815.

The aurora borealis occurs at an elevation, it is calculated, of about seventy miles above the earth's surface, at which elevation the air is rarified to a degree far above that afforded by our best constructed air-pumps.

Borax.

The boracic acid lagoons of Tuscany are an interesting instance of the conversion of a natural phenomenon, which seemed only a subject of wonder, into a productive manufacture. These lagoons are depressions or mud holes in the soil, from which issue hot vapors highly impregnated with boracic acid were formerly regarded with terror by the inhabitants of their vicinity, and they sought by public prayers a deliverance from this scourge. In 1818, Mr. Landerel conceived the idea of rendering these vapors a source of profit. The lagoons being situated upon the declivity of a mountain, they were surrounded by a basin of a mason work, and water from the mountain stream conducted into them, so as to form a series of artificial lakes at different levels. The water is let into the upper basin, where it remains some twenty or thirty hours and becomes impregnated by the acid vapors; at the end of this time the water is drawn off into the second basin, when it receives a further pregation, and so on successively through six or eight, until it reaches the evaporating reservoirs. These are of lead, and the heat for carrying on the evaporation is obtained from the vapors themselves, which are brought in pipes below the boilers. All the means of manufacture are furnished by the locality itself. The annual product of these lagoons is two and a half millions of pounds. The boracic acid is converted into borax by combining with soda.

Polishing Marble.

MESSRS. EDITORS:—I wish to inquire of your numerous scientific correspondents for the best mode or process of polishing marble; also what would be the most suitable and durable mixture to paint or stain letters on white marble a deep and durable black, &c. E. K.

[Our correspondent wishes to know the best way of polishing, &c.—the common method, we presume, being known to him.]