Scientific American

NEW YORK, MAY 24, 1851.

Young Mechanics---The Way to Rise.

We stated last week that few of our mechanics rose direct from the workshop to important places of trust in the Republic, and we also stated that but a few of the great many were qualified to fill important situations even in connection with the trades they learned. Why is this? Is it not possible for men to be as well educated in the workshop as anywhere else? Do mechanics not possess the same abilities as those who follow the professions? Yes. Well then, why is it they are not in general fit to march out from the workshop to fill the highest and most honorable offices in our country?

The answer is, they do not in general try to qualify themselves to fulfill their proper duties, as citizens of this great Republic. We suppose that our mechanics themselves would be planet-struck, if it was proposed to run one of their number for President, but it is not our object, except in an angular direction, to point to political situations—we hope the point however, will not be lost.

We have alluded to the absence of a taste for sound and solid reading among our mechanics, and we have now to complain of the absence of a pure and lofty conversation. The majority of our young men belong to fire or military companies, and during their spare moments, their conversation consists more in what this and that engine can do, &c., and not about how it can be done. Idle, vain and frivolous conversation has a very injurious tendency, like reading bad books. A pure conversation and gentlemanly discussion of useful questions, has a very elevating tendency. Young mechanics, we speak to you, in all earnestness; if you wish to rise, you must be enthusiastic about your business, and in the pursuit of knowledge connected with it. In your spare moments, endeavor to seek enjoyment in talking about the principles of your trades, seek to know the why and the wherefore of everything connected with them, and whatever your hand findeth to do, do it well and with all your might. Do not be eye servants, do not use profane language, and give yourselves the best education you possibly can. Every machinist should learn to draw, so should every carpenter, and do not be content until you fully understand, and can construct every machine, apparatus, or whatever it may be, and can take charge of and superintend every branch of business connected with your trades. Men possessing such qualifications are sure to rise. And what is to hinder you from possessing such qualities, along with a character for honesty, fidelity, and ability? Let every one put this question to his own heart.

New Theory of the Central Heat of the Earth and the Cause of Volcanoes.

Mr. Stevenson Macadam, of Edinburgh, Scotland, has advanced a new theory, as indicated by the caption of this article, which puts an entire new face on the subject, and is distinguished by the firm, clear, unmistakeable logic of the Scottish School. It is well known that as we descend towards the centre of the earth (for all the small depth yet penetrated), the temperature increases at the rate of about one degree every 45 feet. Proceeding to reason upon this as a basis, many suppose the centre of the earth to be a red hot fluid mass, and they account for volcanoes and hot boiling springs upon this theory. Sir Humphrey Davy once held this opinion, but discarded it. The favorers of it believe that the solid crust of this earth lies on the fluid mass as a lump of ice on water; but not so Mr. Macadam: he has adopted the *spheroid* theory, which is thus explained:—If we throw some water on a red hot piece of iron it rolls up into little globules and evaporates very slowly, each drop or spheroid keeping at a far lower temperature than boiling water. A quantity of water, by ordinary boiling, will evaporate fifty times faster than water in this spheroidal state. It is found that there is no real contact between these spheroids of water and the red hot metal, but a kind of reflecting atmosphere of heat. Mr. Macadam believes the crust of our globe to be lying upon the interior red hot round sea at the centre of our planet, in the same way that the spheroid lies on a red-hot plate. The internal crust he likens to a concave mirror, and the hot fluid mass to a sphere, with an atmosphere between the two of vaporized metal. He believes this heat is constant, and that the crust of the globe is influenced by two great forces—gravitation and spheroidal repulsion.

As it regards volcanoes, he believes they are caused by basins of metal at a high temperature, to which water finds admission, thus generating steam, which causes volcanic explosions in some cases, and hot springs in others. The volcanic theory is thus set down as caused by chemical action, the central heat theory has nothing to do with chemical action.

These are the principal features of his theory, and it may be true and it may not. Among the many new and useful discoveries which are continually being developed, there is much that is speculative and of no real earthly benefit—speculations which can never be settled, consequently any person has the perfect right to be as wild and extravagant, or plausible, as he chooses, there being no risk to run, while there may be considerable notoriety gained. This theory of Macadam, however, is the most plausible on the subject which has yet been advanced, we think; and as he allows us 25 miles of solid crust, after which all is red hot fire, we may consider ourselves on solid floating ground until some better theory is advanced.

Electro-Magnetism as a Prime Mover.

Although much has been recently said and written about the application of electro-magnetism as a prime mover, it is not a new subject by any means. After the discovery of Electro-Magnetism, by Oersted, in 1819, it at once became apparent that a new mechanical power was given to man, and many were enthusiastic about its superior advantages over steam, as a propelling power. Our own Professor Henry, now of the Smithsonian Institute, first demonstrated the method of developing great magnetic power in soft iron by a small battery, and as a natural result he applied it to propel machinery. In 1831 he described, in Silliman's Journal, a machine for producing a reciprocating motion, "by a power never before applied in mechanics—by magnetic attraction and repulsion." He stated, however, that it was no more than a philosophical toy, but deemed it not impossible that a modification of it might be applied to some useful purpose. In 1833, Dr. Schultless, of Zurich, Switzerland, exhibited a machine propelled by this power, and so did Dr. Ritchie, of London. In 1834, Prof. Jacobi, of St. Petersburg, described to the Academy of Sciences, in Paris, a method of propelling machinery by electro-magnetism; and, about the same time, Mr. Davenport, of Vermont, who has corresponded with the Scientific American, contrived a machine upon the same principle. In 1836 Mr. Davenport propelled a turning lathe with his electric engine, and at the same time Mr. Davidson, in Scotland, had a turning lathe and a small locomotive in operation by the same power. In 1838 Prof. Jacobi applied his electro-magnetic engine to propel a boat at St. Petersburg; and the effort was apparently a very successful one, for the boat had paddles, was 28 feet long, 7½ wide, drew 2½ feet of water, and with only a battery of 64 platina plates, and but a small engine, he propelled the boat with 12 persons in it at the rate of 3 miles per hour, against the current. In 1840 Mr. Davenport, we believe, printed for a short period, in this city, a paper named the "Electro Magnet," the press which printed it being moved by his electro-magnetic engine. Capt. Taylor obtained an American patent in 1838, and in 1839 he patented it in England, and exhibited a working model in London, which moved a lathe used in turning articles of wood, ivory, and metal.

These were great experiments, and aroused public attention to this "beautiful, cheap, and simple power," as it was termed. In New York, about 1841, electro-magnetic engines became a kind of mania, and hundreds were manufactured to meet the market demand. It did not last very long, however: it was found that they were expensive, weak of power, inefficient, and troublesome. In 1842, Mr. Robert Davidson, of Aberdeen, Scotland, (a mechanic like our Mr. Davenport), built a locomotive weighing five tons, and experimented with it on the Edinburgh and Glasgow Railway. He had 6 batteries, in all containing 60 zinc plates, with iron ones intervening. Th carriage ran at the rate of 4 miles per hour—a failure, to be sure, as we stated last week. The experiments of Jacobi, Davenport, and Davidson, caused disappointment; still, many attributed their failures to mechanical and other defects, and not to the inherent nature of electro-magnetism. This is the right spirit, for, until all the depths and shoals of this science are discovered, it is folly to despair. Among the many successful investigators and experimenters in Electro Magnetic science, the name of Prof. Page stands high; and his recent experiment with an electro magnetic locomotive at Washington, is the greatest effort of the kind ever made. It makes no matter how much mechanical power may be developed by electro-magnetism, if that power is derived at too great an expense to compete with steam, and it is our opinion that the economy of steam power is not so well understood as it should be by many who are sincerely laboring to perfect electro-magnetism. Hunt, in his experiments, says he proved that the greatest amount of magnetic power is produced when the chemical action is most rapid. Hence, in all magnetic machines, it is more economical to employ a battery under an intense action, than one in which the chemical action is slow. It has been proved by Mr. Joule that one horse-power is obtainable in an electro-magnetic engine, the most favorably constructed to prevent loss of power, at the cost of forty-five pounds of zinc, in a Grove's battery, in 24 hours; while seventy-five pounds are consumed in the same time to produce the same power in a battery of Daniell's construction.

A voltaic current, produced by the chemical disturbance of the elements of any battery, no matter what its form may be, is capable of producing, by induction, a magnetic force, this magnetic force being always in an exact ratio to the amount of matter, (zinc, iron, or otherwise) consumed in the battery.

What amount of magnetic power can be obtained from an equivalent of any material consumed? The following were regarded as the most satisfactory results yet obtained:

1. The force of voltaic current being equal to 678, the number of grains of zinc destroyed per hour was 151, which raised 9,000 pounds one foot high in that time.

2. The force of current being, relatively, 1300, the zinc destroyed in an hour was 291 grains, which raised 10,030 pounds through the space of one foot.

3. The force being 1,000, the zinc consumed was 223 grains; the weight lifted one foot 12,672 lbs.

We have no data of the battery expense of the locomotive of Prof. Page, but the experiments of Mr. Hunt and others have proved that one grain of coal consumed in the furnace of a Cornish engine lifted 143 pounds one foot high; whereas one grain of zinc consumed in the battery, lifted only 60 lbs.

The difference of expense between steam and electro-magnetism is obvious, the latter is fifty times more expensive, and some new discovery in its chemical developement must be made before it can hope to enter the field as a competitor to propel machinery. We have heard many objections against the huge engines, boilers, &c., required on board of steamships, and have been told how electro-magnetism would do away with "all unnecessary encumbrances," but we have no hopes that Prof. Page's Rotary Electro Magnetic Engine —for he has fallen back on this idea of Davidson and Avery—nor any other propelled by the same power, can be placed in any less space than a steam engine; we are sure, at least, they will have to be built just as strong, and all those we have seen, exhibited, according to their size, had far less power than the common steam engine.

We consider the locomotive the prince of prime motors, and we have no hopes of ever seeing it superseded by an electro-magnetic engine. We may be mistaken, but when 400 tons can be drawn 58 miles at the expense of only 1½ cents per ton for coal, as has been done by a locomotive, we may begin to talk of the importance of Electro Magnetism as a prime mover.

Astronomical Observations at Washington.

The second volume of "Astronomical Observations," made under the direction of Lieut. Maury, at the National Observatory, Washington, containing the Appendix, has just been published. It is a work which does honor to our country, and Lieut. Maury has our thanks, and will have that of all our readers, for the information we are permitted to glean from its pages in relation to the Electric Clock of Dr. Locke, &c. Capt. Wilkes, of the Navy, it is stated, was the first to apply the magnetic telegraph to the determination of longitude. This was done five or six years ago, for determining the difference of longitude between Washington and Baltimore, and he reduced the results down to the accuracy with which the time, between the ticks of the second-hand could be measured by the eye and the ear; this was the first time the magnetic telegraph was reduced to a valuable astronomical instrument. In 1848, Dr. Locke, of Cincinnati, informed Lieut. Maury that he had invented a Telegraphic Register Clock for Longitude. This clock has been erected in the "National Observatory," by Dr. Locke, and the principle of its operation is the breaking and closing of the circuit, so as to make regular marks on a fillet of paper of a certain length, to indicate the 100ths of a second, unless the circuit is broken by the operator, who is observing the heavens, noting the transit of stars. He then lays his finger on the key, breaks the circuit, and, during the time the circuit is open, there is left a blank on the paper, which can be measured by compasses, and will tell whether the blank was 100th or ½ a second—time of transit.

Pay Your Postage.

When any person sends a letter to another upon matters of business, to gain information, he, as a gentleman, should pay the postage. Mr. O. Child, of Illinois, whose Saw Mill was illustrated in No. 26, who was made to reside in Ohio, by mistake, has received a number of letters for which he has had to pay double postage. We believe that but few realize the extent of our circulation; when any machine is illustrated in our columns, if it has any merit, it is sure to meet with great attention, and hundreds of letters are sent to the proprietor; in such cases it is no more than just and fair for correspondents to pay their own letters. Those who wish to write to Mr. Child will be pleased to direct letters to Granville, Illinois, —not Ohio.

Cotton Crop Prospects.

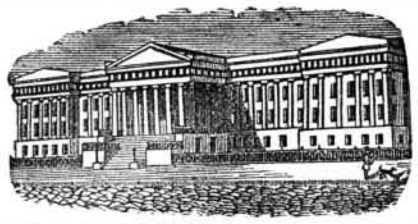
In South-Western Georgia and all that region of country beyond Macon, as well as in the north-eastern counties lying on the Savannah river, the plant is small and unhealthy. The same is true of Burke and Jefferson, two of the most productive counties in the State. The cold weather has kept the plant from coming up, and consequently the stand is a poor one. In no particular, is the prospect so good as it was at this time last year. It will require favorable seasons and a late fall to make so large a crop as the last.

The Seventeen Year Locusts.

We perceive by some of our cotemporaries that the seventeen year locusts have been plowed up in many places in Maryland and Pennsylvania. All those who desire to obtain the most correct description of the appearance and habits of this insect will find the same in an article by Dr. Smith, in number 27, this Vol. Sci. Am.

The Patent Office.

We have been informed that four Assistant Examiners have been appointed in the Patent Office; their names are F. Southgate Smith, of Ohio; Wm. C. Langdon, of Kentucky; Timothy Fitch, of New York, and Henry Baldwin, of Tennessee, at a salary of $1,500 each.



☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS
Issued from the United States Patent Office.
FOR THE WEEK ENDING MAY 13, 1851.

To Jonathan Sullivan, of Lexington, N. C., for improvement in Straw Cutters.

I claim, in combination with the toothed grooved cylinder and curved stationary knives, the clearers, arranged and operating substantially as shown.

To John R. St. John, (assignor to James Renwick, G. F. Barnard, and E. B. St. John, of New York, N. Y., Trustees of the St. John's Compass and Log Manufacturing Co.), for improved method of supporting the vanes of aquatic velocimeters. Ante-dated Dec. 27, 1850.

I do not intend to claim any of the parts herein described, as taken separately; all are well known and in common use: but I claim attaching the disc or plate to the sliding frames, one of which frames carries the shaft of the paddle blades, when said frame and plate are fitted to be lowered into or raised out of a tube, in such a manner that when in place for use the plate prevents any indirect current of water from ascending into or descending out of the tube, to disturb or destroy the accuracy of the instrument, leaving the paddle blades subject only to the direct action of the vessel's progress through the water, substantially as described.

To Rufus Bixby, C. S. Bixby, and John Grist, of Dayton, Ohio, for improvement in Planing Machines.

We claim the employment on one or both sides of the grooving cutters, of a chain or band applied and operated in the manner substantially as described.

To Charles Hoskyns, of New Orleans, La., for improved apparatus for relieving the helmsman from the shock of the rudder.

I claim the combination of two sets of pawls between which a wheel is placed, loose upon the shaft, having an endwise motion thereon, by means of the male and female screw, as described, said wheel being provided with a hub, so fitted as to disengage the pawls when the hub arrives at the limit of its end play in either direction; the result being that the rudder secures itself through the agency of the pawls, and is unlocked so as to be free to move in either direction, by the first motion of the same wheel, which afterwards moves the rudder. In other words, I claim the combination of the hub, secured to the wheel, the male and female screws, or their equivalents, and the ratchet and pawls, substantially in the manner and for the purposes described.

To George Faber, of Canton, Ohio, for improved apparatus for indicating the height of water in steam boilers, etc.

I claim the combination of the chamber with the boiler or other vessel, in which the height of fluids is to be measured by means of tubes so formed and attached, as to act as springs, to indicate the weight of the water at any time within said chamber, for the purpose and substantially in the manner herein set forth.

To James M. Clarke, Lancaster, Pa., for improvement in Flouring Apparatus.

I claim, first, the arrangement of the "hopper boy," revolving on the same centre as the stone and the chamber beneath the stone, by which the flour is cooled as it is conveyed to the centre opening of the bolt, substantially as set forth.

Second, I claim the annular or endless conveyors for carrying the flour, &c, in the several annular chambers, to the spouts, the same being operated in the manner described.

Third, I claim, in combination therewith, the air passage for returning the particles of flour which would otherwise escape, to the centre hole of the floor of the bolting chamber, to be drawn in again by the draft, substantially in the manner set forth.

To Ezra Ripley, of Troy, N. Y., for Crane Hinge of doors, shutters, &c.

I claim the crane door-hinge, constructed in the manner and for the purpose substantially as set forth.

To A. F. Ahrens, of Philadelphia, Pa., for improvement in Setting Teeth.

I claim attaching artificial teeth to a plate in the roof of the mouth, by means of a wedge-formed recess in the tooth, and a pivot of corresponding shape, soldered or otherwise, attached to the plate, when the union of the two is effected, by the use of platinum and tin or solder, substantially in the manner and for the purposes specified.

To A. F. Ahrens, of Philadelphia, Pa., for improvement in Setting Teeth.

I claim securing artificial teeth to a plate in the roof of the mouth by means of a rebate in the inner face of the tooth, and a slide fitting the same and soldered or otherwise attached to the plate in the mouth, for the purpose and in the manner described.

To Joseph Grant, of Providence, R. I., for improvement in Brick Presses.

I claim, first, the form of the pressing plates thicker at one edge than the other, as shown, and for the purpose described.

Second, the motion of the followers or plungers (three) by rollers moving in fixed grooved channels (two) and acted upon by revolving cams, (two) producing a drop movement, and operating as herein shown and explained.

Third, propelling the machine forwards by means of wheels keyed on the mould cylinder shaft, for the purpose of depositing the bricks, as made, in regular layers for drying.

To Martin Rich, of Fairfield, Wisconsin, for improvements in Saw Mills.

I claim, first, the tightener and key, and the manner in which they are used in tightening the dogs, as herein set forth.

Second, I claim the movable arm to regulate the thickness to be sawed when changing from one thickness to another in the same log, without taking the dog out of the log, as herein described.

Third, I claim placing the second dog upon the main plate and adjusting it by the bolt and key, constructed in the form and manner, and for the objects and purposes herein set forth.

No other part of the said described dogs do I, in this my specification, claim as new or original, excepting such as above enumerated.

RE-ISSUES.

To G. H. Corliss, of Providence, R. I., for improvement in cut-off and working the valves of Steam Engines. Originally patented March 10, 1849.

I claim, first, the method substantially as described, of operating the slide valves of steam engines by connecting the valves that govern the ports at opposite ends of the cylinder, with separate arms of the rock-shaft, or the mechanical equivalents thereof, so that from the motion thereof the valve that keeps its port or ports closed, shall move over a less space, while its port or ports are closed, than the one that is opening or closing its port or ports, and vice versa, while at the same time the two arms, by which they are operated, have the same range of motion as described, whereby I am enabled to save much of the power heretofore required to work the slide valves of steam engines, and by which, also, I am enabled to give a greater range of motion to the valves, at the periods of opening and closing the ports, to facilitate the induction and eduction of steam, as specified.

And lastly, I claim the method of regulating the motion of steam engines, by means of the regulator, by combining the said regulator with the catches that liberate the steam valves, by means of movable cams, or stops, substantially as described.

To Calvin Adams, of Pittsburgh, Pa., (assignor to J. P. Sherwood, of Sandy Hills, N. Y.,) for improvement in Door Locks. Originally patented Dec. 17, 1842.

I claim making the cases in which the movements of locks and latches for doors are contained, double faced, or so finished that either side may be used for the outside, in order that the same lock, or cased fastening, may answer for a right or left hand door, substantially as described.

I also claim the peculiar construction and double action (upon an inclined and horizontal track or way) of the locking car, as described, and the combination of the locking car and two safety cars, with one another, and with the connecting or vibrating bar and bolt, as described, so as to fasten the bolt securely and prevent its being picked.

To Alex. Calderhead, of Philadelphia, Pa., for improvement in the Jacquard Machinery for weaving all kinds of figured cloth. Originally patented Feb. 3, 1841.

I claim, first, in connection with looms for weaving figured fabrics, depressing the suspension board, or its equivalent, while the corresponding pattern card, acting as a trap-board, or its equivalent, is elevated substantially as described.

Second, I claim working the card prism, by mechanism connected with the loom, and whilst the boards, or their equivalents, for working the harness, are not opening and closing the shed, substantially as described.

DESIGNS.

To M. C. Burleigh, of Great Falls, N. H., for Design for Stove Doors and Panels.

To James Hutchinson, of Troy, N. Y., (assignor to Deborah, A. E., and Nathaniel Powers, of Lansingburgh, N. Y.), for design for Floor Oil Cloth.

To N. A. Batchelor, of New York, N. Y., for design for Clock Frame.

(For the Scientific American.)

Practical Remarks on Illuminating Gas.

[Continued from page 278.]

The production of gas from oil is a continuous process, and accordingly differs from coal gas. According to trustworthy statements, 1 cubic foot equal to about 6¼ gallons of whale oil, will produce on a average 300 cubic feet of gas. Dr. Fife says that it is generally allowed that by cautiously conducted trials, a gallon of whale oil will yield 100 cubic feet of gas; but this is seldom attained in practice, unless the gas is of inferior quality; for it is well known that by a particular mode, a large quantity of poor gas may be procured; he also says, "I am inclined to think, that in practice, there is in the conversion of oil into gas, a loss of about one-half."

Another material from which gas is generated for illuminating purposes, and which is more or less used at the present time, is Rosin!

Resin.—Resinous bodies form a very numerous class of vegetable substances. When volatile oils are exposed to the action of the air, they become thick after a time, and are then found to be converted into resin. The oil absorbs oxygen from the air, and is deprived of part of its carbon, which, combining with the oxygen of the atmosphere forms carbonic acid. Resinous substances therefore are generally considered as volatile oils saturated with oxygen. The resinous substances are divided into numerous species, such as copal, shellac, benzoin, rosin, &c., the latter only will now command our attention, as it is this species that has been made available for illuminating purposes.

Rosin (or colophony).—This substance is extracted from different species of the fir, and the resinous matters obtained have been classified, and have received different appellations. That procured from the "pinus sylvestus" is the common turpentine; from the "pinus larix" Venice turpentine; and from the "pinus balsamea" the balsam of Canada. The turpentine is obtained by stripping the bark off the tree; a liquid juice flows out, which gradually hardens; this juice consists of oil of turpentine and rosin; by distilling, the turpentine passes over, and the rosin remains behind; by distilling to dryness common rosin is obtained. The yellow color is given to rosin, by adding water while it is in a fluid state; it being incorporated with it by agitation.

Rosin Gas.—If rosin was naturally fluid instead of being solid, there would be no difference in the mode of obtaining gas from it to that practiced in the oil gas manufacture; as this, however, is not the case, it becomes necessary to render the rosin fluid by some suitable means, that it may be easily supplied to the retort; for this purpose the flame from the retort fire, before escaping by the chimney, is employed, by being allowed to pass around the reservoir containing it. Gas is generated from rosin in precisely the same manner as from oil, and the apparatus for both are similar in construction. Rosin is composed of carbon, hydrogen, and oxygen, its atomic formula being $C10+H7+O$. When decomposed these elements form new combinations and yield bi-carburetted, light carburetted hydrogen, carbonic acid, oxygen, and free hydrogen; there is also a large deposition of carbon formed upon the retort. The temperature of the retort should be somewhat higher than that required for the decomposition of oil; if the retort is too cold, a considerable quantity of essential oil is distilled, the vapors of which pass over, while the oil remains behind.

The opening of the retort for the removal of the coke, bricks, or whatever material may be used to increase the heated surface, becomes necessary much oftener in the manufacture of rosin gas than it does in oil gas; and where large quantities are manufactured, the renewal takes place every few hours; this operation is accompanied by an escape of a large quantity of light amorphous carbon, in the form of lampblack, which is conveyed through the air considerable distances, settling upon all contiguous surfaces, and is a constant source of annoyance to the inhabitants residing in the vicinity of such works. Rosin gas has not so high an illuminating power as that generated from oil; nevertheless it is much more desirable, being more free from the obnoxious odor which accompanies the latter, arising from the decomposition of animal matter contained in the oil, and which is brought over with the gas and condenses in the pipes, and not containing so much aqueous vapor which is condensed at common temperatures, and by which much is lost and great inconvenience caused by the clogging up of pipes.

Rosin is oftentimes introduced into coal retorts in a solid state in company with the coal; but this is only done when it is necessary to generate gas in a limited space of time, and more rapidly than can be done with coal alone. In cases of emergency it has been used with advantage, as it becomes decomposed and liberates its gases so quickly.

Rosin gas works have been erected, and companies formed for the purpose of manufacturing and supplying this gas; but they have not been successful; the expense attending the generating is the prime difficulty, and the fluctuating price of the raw material is also a great source of uncertainty. In New York this gas was at one time manufactured upon a large scale, but it has now been entirely given up and coal gas substituted. In Boston likewise for many years this gas was manufactured to a great extent, but is now entirely abandoned. Works were erected in a neighboring city a few years since, and after struggling along for some time, endeavoring to manufacture a gas satisfactory to their consumers, and receiving no remuneration for the investment, they were abandoned, and coal gas works erected in their place, at a great sacrifice of property. J. B. B.

Blasting Rocks.

Blasting rocks by the old process consists in making holes in a proper spot, by using a heavy iron bar, of which the successive strokes produce the desired effect; the hole then is cylindrical and rather conical, being wider at the top by the friction of the rod bar against its sides. The powder has not then all the effect which it could have, and can never be used in large quantity. A process used with full success, is this: a deep hole is first made in the above manner, then a glass tube is inserted, and strong sulphuric acid mixed with a small proportion of water is poured in; the acid dissolves part of the stone; the sulphite is then extracted and the bottom washed by sending down some water, which is pumped out by any means whatever; this operation is repeated as many times as is necessary to produce at the bottom of the hole a kind of pouch, which is well dried by using rags or anything similar. This pouch is then filled with powder by the common process of ramming, and then blasted. The quantity of powder being as large as it may seem necessary, permits to blow up, with a single charge, as much as with ten of the old process, and to have larger blocks if desired.