NEW ROCK DRILLING MACHINE.

We witnessed on Tuesday in company with Mr. I. B. Reynolds of Rutland, Vermont, the operation of a drilling machine recently invented, and of which he is one of the proprietors. The machine consists of an upright boiler, having an oscillating steam cylinder attached which drives the drill, and a pump which constantly forces a stream of water into the bore-hole. The drill is a short hollow cylinder of iron armed with diamonds placed upon the lower end, which is serrated, to form seats for the diamonds. This tool is fixed to a hollow tube of iron to which two gears are attached, connecting with the primary gear, which is driven by the steam cylinder. The upper and lower gear give, by the ordinary adjustment, reverse motion to the tube. The water is forced through the tube by the pump and effectually clears the bore-hole of detritus. The cutting is done in a circle, by the revolution of the tool, and a plug is left which passes up through the tube as the latter descends, leaving, however, sufficient room for the descent of the water. This plug or cylinder of rock is easily broken off and removed, and is in many cases valuable, as it is always a good specimen of the rock through which the boring is done. Surveys may thus be made of rocks deeply imbedded and their quality ascertained with comparatively small expense. The machine, working at moderate speed, bored in our presence a very smooth, round hole, through extremely hard rock, at the rate of one inch per minute. The diameter of the hole drilled was one and one half inches. Inspection of the drilling tool with a magnifying glass, showed no appreciable wear. The machine is perfectly automatic, and will drill with equal facility at any angle.

DANNER'S PATENT PENCIL GUARD.

The little device illustrated in the engraving is designed for clerks, freight agents, merchants, and others whose business requires during business hours frequent resort to the common lead pencil. It is intended as a holder for the pencil and a guard to its point, so liable to be broken and so annoying to frequently sharpen. The guard pinned to the coat or vest, is a much better receptacle for the pencil than the pocket, and it has the advantage of being always ready and in place for use. It is a simple sheath of sheet metal, of a proper diameter to receive the pencil, the lower or closed end being of a larger diameter and lined with a circular or cylindrical gland of india-rubber designed to embrace and hold the pencil. In the engraving the pencil is seen with the sharpened point protruding, but it may be placed in the sheath by either end. Two spring needles or pins serve to secure it to the clothing. It is durable, and cheap. It may be made of white metal, sheet brass, or other material, and can be left the natural color of the material, plated, or japanned.

Patented, June 16, 1858, by John Danner, Canton, Ohio, who may be addressed for additional particulars.

The New Oxygen Light.

The American proprietors of the oxygen light, recently invented in France, have been submitting it to Prof. Doremus for examination and experiment. We understand that the results of these experiments have been so satisfactory that a company has been formed to introduce the invention. A large laboratory is to be erected, two hundred feet long and one hundred in breadth, on Forty-first street, in this city, for the extensive manufacture of oxygen gas. This gas is to be mixed with the ordinary street gas. An exchange says:

"It is not intended to lay pipes in the thoroughfares for the conduction of the oxygen for some time, even if the company were authorized, but they do propose conveying it in portable vessels to the buildings, public or private, in which it may be desired for illuminative purposes. Mr. Booth is placing throughout his new theater on Sixth avenue duplicate pipes, so that, when the oxygen is manufactured in quantities sufficient, it can be introduced without delay, and many gentlemen of fortune who have seen the light at the office of the company in Nassau street are also anxious to have it in their houses.

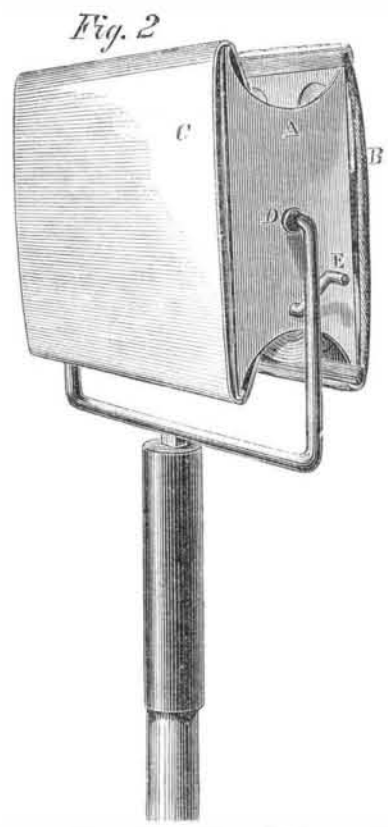
"About the middle of November, it is thought, the new light, which is nearly 200 times more brilliant than that emitted by a wax candle, and 14 times more powerful than the illuminative power of carbureted hydrogen (19¼ times that of the gas made by the Manhattan Company, as shown by actual measurement in the laboratory of the College of the City of New York), will be formally and permanently introduced. It is not only more powerful, as has been demonstrated, in brilliancy, but, compared with the ordinary gas light, many per cent cheaper. A thousand cubic feet of oxygen will cost the consumer, it is estimated, $25, and a thousand feet of street gas, $3, or $28 for two thousand feet of oxygen and carbureted hydrogen, which total of mixed gases is equal in their illuminative quantities to not less than 28,000 feet of the gas that is consumed in our street lamps, at a cost of $74, or $46 more than apart from its great steadiness, purity, and beauty, the oxygen light it is now believed will cost. This will certainly, in the course of a year, aggregate to the people of a city so large as is New York an enormous saving."

BURGESS' PATENT WINDOW WIPER.

Next to the nuisance of washing off side-walks with hose in our cities is that of window-washing. In summer this is

simply an annoyance; in winter absolutely dangerous, as the flagged or bricked walks are made really unsafe for pedestrians. The rebound of a stream from the nozzle of a hose pipe against a window in warm weather will do no other damage than to wet and soil the clothes, but a fall on slippery pavements jeopardizes life and limb. To prevent this splashing of water with its accompanying annoyances in washing windows is the object of the device illustrated in the engravings.

It is a rectangular frame, A, made of sheet metal, as tin, and attached by a swivel to a handle so that it will freely rotate. The sides are perforated, as seen in Figs. 2 and 3. On one of these faces, B, is secured, by means of elastic bands, a washing cloth of Canton or woolen flannel, or other material, or, for polishing the windows, a piece of chamois skin may be substituted. The other face, C, is covered first with a sheet of rubber or other elastic material, over which is drawn a wiping cloth two yards or more in length, and wound on rollers inside the frame or box. One end of this cloth is secured to the pivot, D, of the box, which passes through it from end to end, and the other to a roller inside the box, having a crank E, on the outside of one end by which the cloth may be wound up, thus presenting a dry face as fast as that portion in use becomes wet. By turning the box on its pivot or swivel the cloth may be wound or unwound on the central spindle at pleasure.



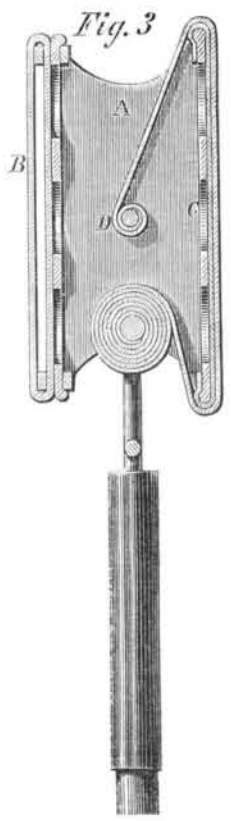


Fig. 1 shows the method of using the device; Fig 2, gives a perspective view, and Fig. 3 is a transverse section. The rectangular form of the implement allows it to work into the corners of the panes. By the use of this implement there is no necessity of climbing steps or chairs, and as there is no spilling and spattering of water it may be employed for inside as well as outside cleaning. The box can be reversed instantly to wash or wipe. Its advantages are apparent at a glance.

Patented July 28, 1868, by B. F. Burgess, Jr., who may be addressed at 9 West street, Boston, Mass. The patentee is desirous of disposing of the entire right, as he is engaged in another business, and the price and terms will be made correspondingly accommodating.

A Large Elevator in Boston.

Boston is to have another big feature beside the great organ. The Boston and Albany Railroad corporation are erecting a new and capacious grain elevator. The plan of the building is somewhat different from the large elevators at Albany, N. Y., Chicago, and other places. The building is making of brick and wood, and will be about seventy feet high. The upper or wooden story will contain 82 bins, some of which will contain 1,500 bushels of grain, and others twice that amount. The total capacity of the edifice will be 250,000 bushels. The machinery will be worked by steam, and there will be millstones to grind corn for patrons. On the lower floor is a track to accommodate three freight cars at the side. The center of this floor is occupied by a deep vat, into which the grain will be shoveled from the cars in a very few minutes, and the empty cars will then be run out and three full ones take their place, and so on. In the center of the building will be a shaft running up to the roof. An endless belt runs over a wheel at the roof and another in the vat, the face of which is covered with cups, and as the belt will constantly move, those cups will ceaselessly go up full and come down empty.

At the top another form of propulsion will carry the grain into any particular bin desired. By this process a car load of grain can be brought direct from Chicago, emptied at the elevator, in the elevator, in ten minutes, and the car sent back the same day. The cost of elevating and storing the grain will be one cent per bushel for the first five days, and for a longer storage so much for every ten days. The grain can be readily removed from a pointed opening in each bin. The detention of cars loaded with grain, while waiting for merchants to take it away, will be remedied, and the facilities for storage will be an item which it is expected Western merchants will appreciate. The elevator will be in working order in about two months.

New Theory about the Formation of the Diamond.

The origin of the diamond has been a subject of much speculation, inasmuch as the circumstances under which it is found in nature afford us no clue to the process of its formation.

Lately, Prof. Simmler of Switzerland has added a new theory to the many existing ones, which seems to us to be the most probable of all. The diamond often incloses cavities, which in some instances contain a gas, in others a liquid. Sir David Brewster, who had given much attention to the subject, found in investigating the nature of the liquid, that its refractive power is less, but its expansive power greater than that of water. Further inquiry as to the probable nature of these substances was not made until quite recently.

In comparing the results obtained by Brewster with those calculated for other liquids, Simmler found the numbers for the expansive and refractive power of the liquid referred to, to coincide singularly with those for liquefied carbonic acid. But other facts observed by different savans, tend to prove also the presence of this agent in the coating of the most valuable of gems. We mention the bursting of such crystals, when exposed to heat, the frequent occurrence of two liquids in the cavities, wherefrom the one behaves like water towards heat and light and the other like liquid carbonic acid. On one occasion it was observed that the liquid in a quartz crystal which was dashed to pieces, scattered its contents around with a great noise, burning holes in the handkerchief wound around the hands of the experimenter. The acid content itself had disappeared. Upon these observations Prof. Simmler establishes his theory. If carbon, as he supposes, is soluble in liquid carbonic acid, it would then only be necessary, to subject the solvent to slow evaporation—the carbon would thereby be deposited and by taking proper care assume crystalline forms. In evaporating quickly, the so-called black diamond might perhaps be produced, which in the state of powder is largely used for polishing the colorless diamond. Though the liquid referred to has never been subjected to chemical analysis, the formation of liquid carbonic acid in the interior of our globe, may nevertheless be considered as highly probable. In the gaseous form, we know it to be evolved in immense quantities from fissures, volcanoes, and mineral springs. When now this gas is produced in the cavity of a rock which is free from fissures, it will finally be compressed so highly, that it will assume a liquid form by itself. Certain rocks may be considered strong enough to resist the expansive force of this agent. Let now carbon be present. If the same is soluble, it will be taken up and deposited again while the carbonic gas is escaping through some newly formed cracks or fissures.

Chinese Grammar.—Max Müller recommends the study of the Chinese grammar. "Those," he remarks, "who can take an interest in the secret springs of the mind, in the elements of pure reason, in the laws of thought, will find a Chinese grammar most instructive, most fascinating. It is a faithful photograph of man, in his leading strings, trying the muscles of his mind, groping his way, and so delighted with his first successful grasps, that he repeats them again and again. Every shade of thought that finds expression in the highly finished and nicely balanced system of Greek tenses, moods, and particles, can be expressed and has been expressed in that infant language by words that have neither prefix nor suffix, no termination to indicate number, case, tense, mood, or person.

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Contents:

(Illustrated articles are marked with an asterisk.)

ONE IDEA MEN.

An exchange says that "one idea men are seldom healthy wealthy, or wise." It adds that "It matters not whether they be crazy philanthropists, wild enthusiasts, or dull dirt diggers. Nature abhors such men quite as much as she does a vacuum and invariably punishes them. She loves variety and has furnished it in endless profusion in all her works." The above is a good example of the glittering generalities, which captivate the minds of men by their sound while sense is lacking. The statement is not true, while the illustrations drawn from nature are either false or inapplicable. The idea that nature abhors a vacuum was long since exploded, and although nature has furnished an infinite variety of all that is pleasing and useful to man, as well as some things which are not so obviously pleasant and useful, we find upon the most superficial observation each animal or plant confined to certain functions which are the purpose or the "one idea" of its existence. Cows do not attempt to fly, nor birds to burrow in the earth, unless they are sand-martins, and it is just as absurd to suppose that all men or that any man can know or do everything, as to suppose bees capable of giving milk, or pigs to hive together and make honey.

The truth in regard to this matter is that men who achieve great eminence, or accumulate wealth by their own efforts are "one idea" men in the highest sense of the term. Philosopher or reformer, inventor or merchant, each must have a definite aim in view to be successful, an aim to which all other knowledge, all side issues, all effort must converge, and this aim then becomes the one idea until its accomplishment.

It is difficult to conceive of any field of exertion where such concentration of thought and effort will not result in success and even fame. The best rower, the best skater, the best dancer, the orator who rules the hour, the actor who draws the crowd, the eminent jurist, the eloquent divine, all are men who have earned their supremacy by dint of persistent effort in one direction. No matter how humble or how frivolous an occupation may be, a man who is superior in it to any other has secured, if he has not attained, all the success which can be expected in his peculiar field; and whether in learned professions, or mechanical arts, it has been just such one idea men who have always gained distinction. And we repeat they always will gain it.

Nor is devotion to a single purpose opposed to liberal views and general attainments. On the contrary, we have always found those men who are called one idea men, more liberal in their views of affairs, more tolerant of others opinions, and more highly cultivated than the "Jacks at all trades," by far more numerous and blatant, with whom we come in contact. A distinguished clergyman once assured us that he never read the Bible with greater pleasure or profit, or attained more scriptural knowledge in an equal time, than when he perused the Old Testament with the one idea of tracing link by link the genealogy of Christ. It is impossible for the mind to closely examine any subject without making it a focus upon which is brought to bear the concentrated light of collateral science or philosophy. Hence it is that minds which have been closely kept upon a single subject of life study although they may not have skimmed over so many topics as others, who think more disjointedly, come to be recognized authorities. What they know they know thoroughly, and their opinions may be depended upon. Probably no man ever existed of more diversified attainments than Watt, and no man ever was a more strictly one idea man than he in the just sense of the term. A distinguished author forcibly remarks that "in the secular sphere it is conceded that the powerful minds are those who rigorously confine themselves to one department of thought. Newton cultivated science and neglected literature. Kant wrought in the quicksilver mines of metaphysics for fifty years, and was happy and mighty in his one work. These men made epochs, because they did not career over the whole encyclopedia. And the same is true in the sphere of religion. The giants in theology have dared to let many books go unread, that they might be profoundly versed in revelation. And the mighty men in practical religion, the reformers, the missionaries, the preachers, have found in the distinctively evangelical elements of Christianity, and their application to the individual soul, enough, and more than enough, to employ all their powers and enthusiasm."

In practical mechanics, as well as in philosophy, we have always found this class of men to be the most reliable, and successful, and for these reasons as well as many others we have not stated, we say give us the one idea men.

TREATMENT OF APPRENTICES BY "OLD HANDS."

The love of power and its exercise, the assumption of superiority in position and knowledge, tend to make tyrants of all men. But nowhere is the exercise of this disposition more unpleasantly seen and more unpleasantly experienced than in the shop. It is very hard for the boy, perhaps just from school, where his labor was merely that of the mind, and where, perhaps, he had the sympathy as well as the assistance of a judicious teacher in his tasks, to come as an apprentice in the shop and accustom his untried hands to the hard substance of metals and woods, without his being compelled to bear the harder taunts, jokes, and witticisms of his seniors. Yet these he must, not unfrequently, bear. Instead of trying to make the apprentice's course plain, smooth, and pleasant, it is too often the case that the journeymen, otherwise sensible and considerate, encourage if they do not inaugurate a system of petty annoyances and petty tyranny, as disgraceful to their character as men as it is confusing and cruel to the victim. There is nothing manly in this. If it is designed to impress the novitiate with the superiority of the attainments of his tormentors, that end could be gained as readily by quietly pointing out his failures, and instructing him in his duties.

This victimizing of apprentices is a relic of barbarism, imported here from the old countries, England especially, where the lower class of workers seem to have the idea that brutality is the only proof they can give of their superiority over their inferiors. We have seen many cruel experiments tried by this class of men who disgrace their nature and calling. Imposing upon ignorance, betraying confidence, and falsely swindling the trust given them, they take a demoniac pleasure in fooling, bothering, and annoying those they should be proud to instruct and assist.

To a lesser extent this course is pursued in almost every shop in the country. Where this spirit dares not be manifested openly, in the way of practical miscalled jokes, it is in either giving false information, or a refusal to give any; in a neglect of the common shop courtesies, and a supercilious manner and pretentious bearing. A miserably mean jealousy, born of a low spirit, is the source of all this nonsense. It does not pay. It impairs the confidence the apprentice should feel in the superior knowledge of the journeyman, tends to disgust him with his business and his future associates, and leads him to refuse to listen to the instructions of those wiser than he.

Possibly, before the time of his apprenticeship expires, he may learn to estimate these annoyances at their proper value, but it is more certain that the feeling engendered by the foolish tyranny to which he has been subjected will influence him through life. How much better for him, and more honorable for his seniors, that they gave him encouragement by word, and assistance by act, so that the young man striving to become one of the honorable guild of mechanics, should feel at once, in his introduction to a shop, a fraternal sentiment toward his fellow workmen, and be certain that any failures or mistakes he might make would be occasions of assistance from his superiors. The latter would lose no jot or tittle of their superiority, while the novice would be improved in his workmanship, his respect for himself and for his teachers. Deal justly by the apprentice, fellow journeymen.

IS BRAIN LABOR PECULIARLY EXHAUSTING.

It is quite a common idea that the labor of the brain, the tasking of the mind, the devotion to pursuits demanding mainly mental exercise, is exceeding deleterious to both physical and mental health. The idea conveyed is that the brain (if that is the physical organ through which the mind acts) is a very tender and delicate portion of the human organism, needed to be perpetually dandled on the lap of carefulness and preserved from rude shocks and even from steady hard work.

The exhausting labor of the muscles, such work as handling heavy bodies while exposed to hot sun or chilling winds—that work done by teamsters, stone and brick masons, farmers, hod carriers, etc.—seldom receives notice from writers who harp on the exhaustive nature of brain work. There are other employments, not requiring, perhaps, so great an outlay of physical power, but which are dreadfully monotonous, merely mechanical, and without the stimulus of mental interest, which are never mentioned as peculiarly exhausting; yet probably few brain laborers would be willing to drive a team, pave streets, build houses, or weed an onion bed rather than think, and write, and talk.

The ultimate result of this reasoning about the exhaustive nature of brain work would be to reduce the worker to a mere machine or a mere animal, and instead of our leaders of thought, our contrivers of inventions, our producers of improvements, and our intelligent mechanics, we should have a community of human clods, eliminating no new ideas, applying to new purposes no well known principles, and making no new improvements. If it is said that the excess, rather than the exercise of brain work, is what should be guarded against, it may be replied that what is excessive labor to one is mere play, or, at least, no task to another; each man is the best judge of the limit of his mental as well as of his physical powers.

There are no more persistent brain laborers than our mechanical inventors and scientific discoverers, yet we do not remember any instance where either of these classes, because of their devotion to their specialties, have become insane or died from softening of the brain. We believe the brain is as strong as the muscles, that it will as quickly give the alarm and demand rest as the legs or the arms. We think our inventors and mechanics need not coddle their brains any more than their biceps muscles. We are thinking animals, and thinking is healthier than mental stagnation.

PROGRESS OF THE ART OF DENTISTRY.

Although from remote periods attention has been paid to the means of preserving and beautifying the teeth, it is only within the last century that the art of dentistry has attained the rank of a distinct profession. All that is known of the early practice of the art has been derived from the remains of teeth found in ancient sepulchres, and the meager allusions to the subject found in the works of Greek and Latin authors. Galen wrote upon the subject in the second century, and Fallopius, Eustachius and Paré in the fourteenth, fifteenth, and sixteenth centuries, but no elaborate treatise appeared until the eighteenth century. The most prominent of those upon which the modern school of dentistry may be said to have been founded, was the celebrated treatise of John Hunter.

The authors of these works, were however, not practical dentists, and their works relate principally to the anatomy of the teeth, and the nature of the diseases to which they are liable, rather than to the repair of decayed teeth, and the supply of artificial ones, which now are the prominent features of the art. Since these writers, there have appeared numerous treatises of a more practical character, and the progress of the art has been constant and rapid.

The art of filling teeth with gold is a very old one, and was practiced by the Egyptians, as also the substitution of artificial teeth of wood and ivory fixed to plates of gold. The practice of filling or plugging teeth with metals, as well as the fixing of artificial teeth to plates, was revived upon the invention of porcelain or mineral teeth, which took place in the earlier part of the present century.

Mineral teeth were originally a French invention, but they owe their perfection principally to American improvements. They are now made so as to imitate almost perfectly the natural teeth, as well as the gums, in form and color. The artificial teeth made of ivory, or the teeth of animals modified in form to resemble human teeth were completely superseded by the porcelain, as soon as their merits became generally known; mineral teeth being more cleanly, as well as more natural in appearance. Gold, silver, and platinum were used to mount them. The demand for the services of the dentist was largely increased by the adoption of this improvement.

The introduction of rubber-plate in the mounting of teeth, also, by greatly reducing their cost, greatly increased the demand. Teeth thus mounted gave great comfort to the wearer from the lightness and elasticity of the plate. Some doubt was at first felt as to their effect upon the health, as well as their durability and cleanliness; but while in these respects rubber is, undoubtedly, somewhat inferior to gold plate, it is not so much so as to greatly depreciate the value the improvement, and their popularity is daily increasing.

The dentist has latterly been called upon to enlarge his field of operations. Eminent surgeons have not failed to see that the resources of the art were equal to the accomplishment of more than the repair, and restoration of teeth. It was evident that it might be extended to the connection of malformations as well as to the artificial supply of parts which had fallen a sacrifice to disease, or had been removed by the knife of the surgeon. Thus a new and extensive field is opening, and a more extended knowledge of general anatomy and the principles of surgery is required of the professors of this art than has hitherto been requisite. The professors of general surgery are beginning to recognize a powerful adjunct in the sister art of dentistry. The *Medical Gazette* announces that hereafter, a department devoted to dental science is to be a feature of that publication. We hear of colleges of dentistry in successful operation in different parts of the country, and of others being projected, while among our most valuable exchanges are the journals devoted exclusively to this art. These facts are a sufficient warrant that the art is still a progressive one and there can be little doubt, that the future will see dentistry taking its proper and legitimate rank among the learned professions.

POWER LOOMS IN THIS COUNTRY.

Although the art of weaving is of such antiquity that no records exist as to the date of its discovery, it is only about eighty years since the first power loom was invented, and not so long since it was so far perfected as to possess a decided superiority over the hand loom. To Rev. Edmund Cartwright, in 1787, belongs the credit of constructing the first successful power loom.

In this country power looms were first built and set at