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USEFUL RECEIPTS.

Valuable Discovery.

John W. Bennett states that he has discovered a very effectual means of preserving writings, charts, bank bills, and pictures, as well from injury by time as from forgery or alteration. The process is a most simple one, and well worth knowing. It consists merely of running a very delicate coating of gutta percha over the surface of the article. It is perfectly transparent, and is said to improve the appearance of pictures. By coating both sides of an important document, it can be kept in the best preservation. It renders it waterproof, and the plan would thus be a most invaluable one for ship charts. If used on bank bills it would be a most efficient means of preventing fraud, inasmuch as no alteration could be made on the face of the bill without removing the coating, which it would be impossible to do without destroying the whole. Mr. Bennett, the discoverer of this new useful property of gutta percha, was the late keeper of the Minot's Rock light-house, and the manufacturer of the two sledge boats, formed of willow and covered with rubber, to serve as life boats, which have received the high appreciation of Dr. Kane, of the Arctic expedition.—[Exc.

[It would have been well to have told the public how the thin coat of gutta percha was applied, and all about the above process for protecting bank notes, &c. In this case we see nothing more than that gutta percha answers the purpose of any other elastic varnish.

Rusty Iron.

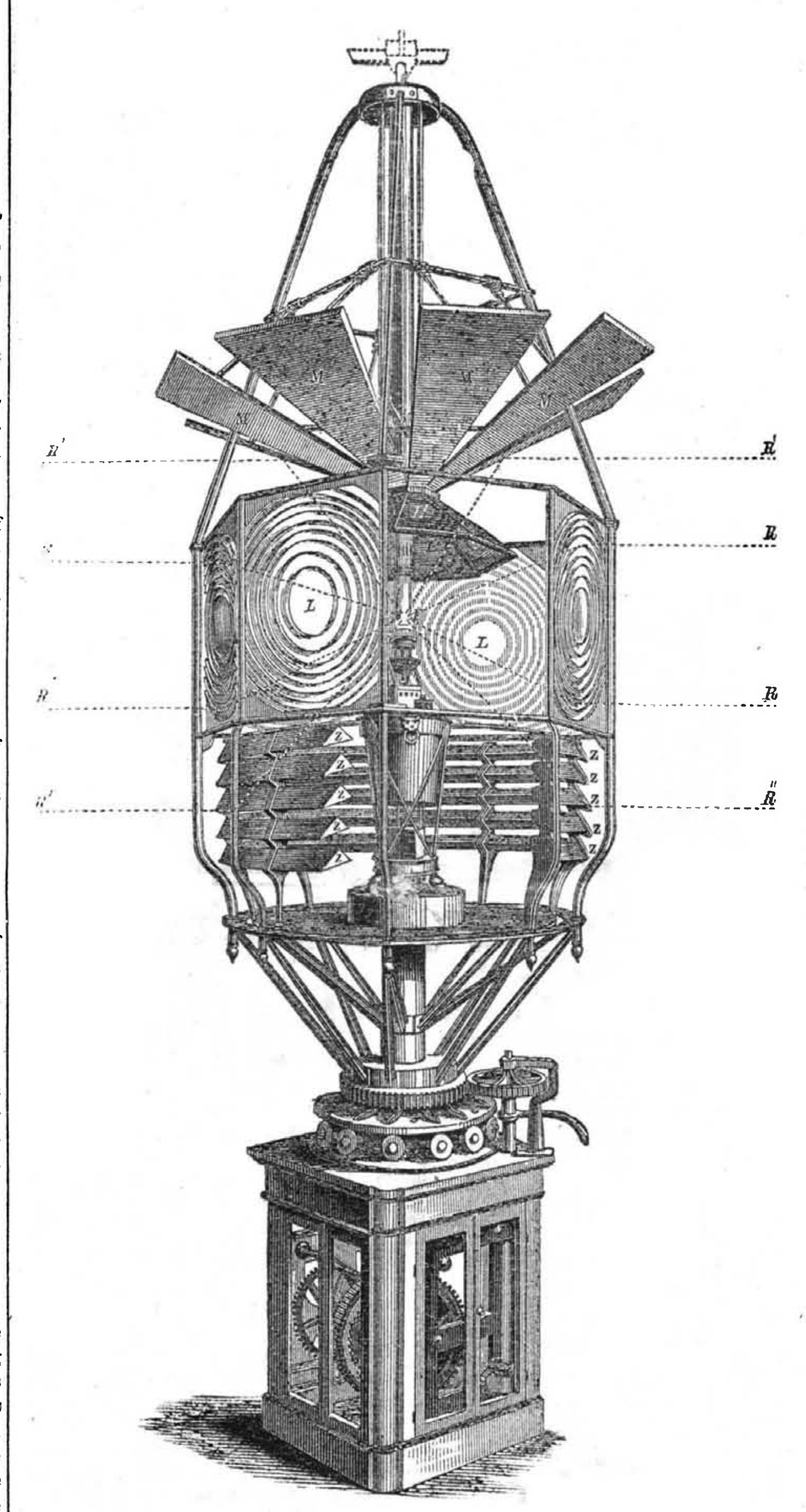
In answer to the inquiry put by "B. G.," who is desirous of learning the most effectual mode to prevent his 5-8ths rod-iron fence from being entirely destroyed by rust, I beg to inform him, the cure for iron sickness is to have it galvanized (which means coating it with zinc). The metallic contact between the zinc and iron immediately suspends the destruction going on with the latter, because the zinc is lowest in the scale, and is the more easily oxydized of the two. This plan was well known to Sir Humphrey Davy, and has been lectured on by Prof. Brande, of the Royal Mint. I write from my own experience, having had some rusty garden tools galvanized, that have since been four years in use, and are quite perfect.—[The Builder.

[It will be no easy matter to galvanize a rusty wire fence; but it certainly would be a good plan to prepare wire for fences by galvanizing it before it is offered for sale. If rusty wire is rubbed with boiled oil, in which some red lead has been mixed, on a warm day, the rusting process will be arrested.

The tartrate of soda, is a good and agreeable substitute for common sulphate of magnesia, as a purgative. Ten drachms is a medium dose.

The Crystal Palace is going to be surrounded with groggeries, unless the Common Council shuts them out.

GILLILAND'S DIOPTRIC CRYSTAL LENSES---Figure 1.



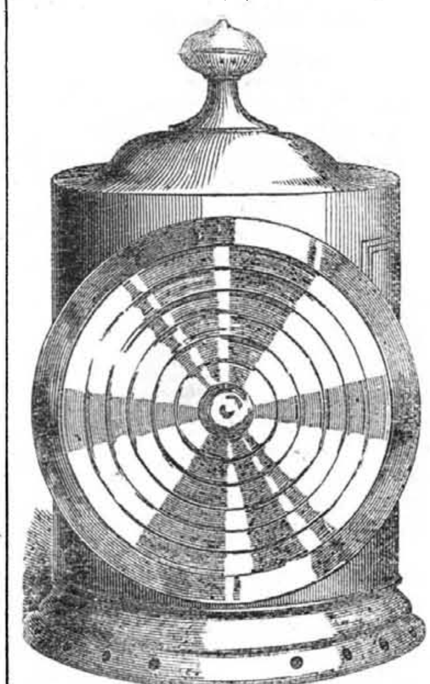
One of the greatest improvements for the benefit of commerce, made in the present century, is the employment of lenses, for reflectors in Lighthouses; this has been acknowledged by the most scientific men of the age, and no man can doubt the fact who sees a lens light and a reflector in two different lighthouses. The application of the lens to other purposes than lighthouses would certainly be as great an improvement and benefit to the community—such as railroad lamps on locomotives, at switches, stations, &c.; beacon lights, steamboat lamps, dock lamps, &c.; and this has long been a desirable object by men of science, but until recently it never was done, owing to the old expensive way of making lens. The improvement now made is a grand one, and is the invention of John L. Gilliland, Esq., of the Brooklyn Flint Glass Co., for which a patent was granted on the 10th of last August. On page 174, this Vol. of the Scientific American, we briefly described this invention, for which a patent was taken out in England in the name of Mr. Newton, the agent there, and not that of Mr. Gilliland—a system pursued in England which we do not approve.

The improvement consists in moulding dioptric lenses of any size, or in sections, and making them of crystal. The dioptric lens heretofore in use for sea and other lights requiring great intensity, have been in rings made up in segments according to the diameter of the required lens. It has been pronounced impossible to produce accurate lenses of large size, made in one piece, and it has also been pronounced impossible to make them of pure flint glass, hence crown glass has heretofore been exclusively employed in the Fresnal apparatus, and the "annular band lens," alone attempted. These two pronounced impossibilities are proved to be fallacies by that improvement. Lens of any size are made by Mr. Gilliland in one or more pieces, and of pure flint glass, thereby reducing the expense so much that this great improvemeet can not only be cheaply applied to light houses, but for all the varied purposes we have already enumerated. On page 174, while noticing this invention, we recommended it for dock lights to our ferries. Since that time one has been placed on the South Brooklyn Ferry Dock, and its brilliancy has astonished all who have seen it.

Fig. 1 is a revolving dioptric apparatus of the first order for a lighthouse, and fig. 2 is a view of a locomotive lamp for railroads, with the new dioptric lens cast in one piece.

In fig. 1 the lenses are arranged around a central lamp placed on the level of their focal plane, and forming by their union a right octagonal hollow prism circulating round the fixed central flame, and showing to a distant observer successive flashes of light. The action is similar to that of mirrors, but the flashes of light are far more intense. Each lens subtends a central horizontal pyramid of light of about 47° of inclination, beyond which limits the lenticular portion could not be advantageously pushed, owing to the extreme obliquity of the incidence of light; but Fresnel conceived the idea of pressing into the service of the mariner, by means of two very simple expedients, the light which would otherwise have uselessly escaped above and below the lenses. For intercepting the upper portion of the light, he employed eight smaller lenses of 19 68 inches of focal distance inclined inwards towards the lamp, which is also their common focus, and thus forming by their union a frustrum of a hollow octagonal pyramid of 50° of inclination. The light

Fig. 2.



falling on those lenses is formed into eight beams rising upwards at an angle of 50° inclination. Above them are arranged eight plain mirrors, so inclined as to project the beams transmitted by the small lenses into the horizontal direction, and thus finally to increase the effect of the light. In placing those upper lenses, it is generally thought advisable to give their axes a horizontal direction of 7° or 8° from that of the great lenses, in the direction contrary to that of the revolution of a frame which carries the lenticular apparatus. By this arrangement, the flashes of the smaller lenses precede those of the larger ones, and thus tend to correct the chief practical defect of revolving lenticular lights, by prolonging the light periods.

F is the focal point in which the flame is placed; L L are large annular lenses forming by their union an octagonal prism, with the lamp in its axis, and projecting in horizontal beams the light which they receive from the focus. L′ L′ are the upper lenses, forming by their union a frustrum of an octagonal pyramid of 50° of inclination, and having their foci corresponding in the point, F.—they parallelize the rays of light which pass over the lenses. M M are the plane mirrors placed above the pyramidal lenses, L' L', and so inclined as to project the beams reflected from them in planes parallel to the horizon. Z Z are lower zones, substituted for curved mirrors. The lower part shows the movable frame work, which carries the lenses and mirrors, and the rollers on which it circulates, with the clock-work for giving motion to the whole.

Mirrors or reflecting lights are open to the objection of losing light by reflection and of being composed of perishable materials as it regards their polish; the plated silver convex concavo plates soon wear out by frequent polishing. The dioptric lens of Mr. Gilliland is made of imperishable materials, and its illuminating effect in comparison with a mirror is said to be as 140 is to 87—a great difference truly. We consider that making dioptric lens of moulded crystal, by which they can be produced at such a low rate as to be employed for the different purposes we have stated, is one of the most valuable inventions that has been brought before the public in a long time. There should be an [illegible] system of signal lights adopted for [illegible]mboats, so that there can never be [illegible]ke made by one vessel respecting [illegible] which another is steering, such a[illegible] light on the larboard paddle box, and a red one on the starboard one, and a clear brilliant lens light on the bow. This lens has been applied to lanterns for hanging on the top mast of sailing vessels, and no one should be allowed at sea, or at anchor in a river to be without such a lantern. Every rear car of a railroad train should have one of these lamps, in order to prevent being run into, as sometimes has been done by a following train when something detained the first one. The lamps and lanterns made with a crystal lens give a light which can be seen at many miles distant.—These improved crystal lenses applied in different ways to lamps, like figure 2, for railroad, dock, and steamboat lamps, also to lanterns for steam and sailing vessels, can be seen at the warehouse of the Brooklyn Flint Glass Co., No. 30 South William street, this city. We would state here that this American Company was awarded a prize medal at the World's Fair for the best flint glass that was exhibited there—it possessed a greater amount of brilliancy and purity of color than any exhibited by the famous establishments of France Bohemia and England.

The Largest Gypsum Field in the World.

Dr. George G. Shumark, of Arkansas, recently delivered a speech upon railroad matters at Fort Smith, Ark., during which he made known the very important fact that the largest gypsum field in the world lies about three hundred miles west of Fort Smith, Ark., in the plains explored by Capt. Marcy last year, extending over an area of three hundred miles north and south, east and west. The strata in some places is twenty feet thick, of the purest kind, white, and in some instances transparent. He says there is a sufficient quantity of it to supply the whole world, and would employ a railroad in its transportations one hundred years. Gypsum when burnt, becemes what is known by the name of plaster of Paris—a very valuable article.

A Ten Thousand Dollar Prize.

Mr. Henry L. Fitch, of San Francisco, has offered a prize of ten thousand dollars for the best treatise on the proposed Pacific and Atlantic Railway—the work to be written in simple and lucid style, and embrace the most thorough and exact treatment of the subject in all its bearings. Mr. Fitch names a committee to meet at Washington on the 15th day of November next; and the manuscripts are to be sent to S. P. Andrews, New York City, before the 1st of November, 1853.

[The above we take from an exchange.—We are not acquainted with any of the particulars, but as it has floated about considerably, we must say that we consider it a rare phenomenon. Who is this benevolent gentleman, Mr. Henry L. Fitch, of San Francisco who offers such a prize for a railroad treatise, and who is this S. P. Andrews?

Another Awful Railroad Accident.

On Friday (6th inst.,) last week, the railroad express train, which left this city for New Haven at 8 A. M. dashed down into the river at Norwalk in the gap of the drawbridge at that place, which had been opened to let a steamboat pass, by which event no less than 46 of our fellow beings lost their lives.

The train alluded to consisted of engine, tender, one baggage car, a smoking and mail car, and five first class passenger cars.

The Norwalk railroad station is located from a quarter to half a mile on the west side of the bridge over Norwalk river, and between it and the bridge is a sharp curve to the right, in the road. The track is laid nearly on a level with the general surface of the ground at that place, but a number of houses and trees so intervene as to prevent any view of the bridge from the railroad, until fairly upon it.

The bridge signal may be seen at a great distance this side of the draw, but, getting nearer, it is not clearly in view. The train to which the accident happened does not stop at Norwalk, and it seems the engineer neglected to notice the signal of the draw being opened.

Owing to the curve in the road just before coming to the draw, the place has always been held to be dangerous, but the following instructions of the company are severe and precise:—

"6. All trains must run with care in approaching Norwalk River Bridge. Trains going east from Norwalk station will move around the curve with exceeding care, and Conductors on trains out of time are cautioned about crossing the bridge; they will be held responsible for the safety of the trains.

8. In foggy weather, trains will approach the bridge with great care, and if trains are due, stop and send a man 1,000 feet ahead with signals."

Instead of obeying these instructions, from evidence adduced before the Coroner's Jury, it appears the accident was caused solely by the engineer—Samuel Tucker. The draw signal was set correctly, but he heeded it not, nor did he check up the train materially until he came in sight of the draw itself, at a distance of scarcely ten rods. Then he reversed his engine, and, with the fireman, jumped into the water, both escaping, but with injuries.

So great was the momentum of the train that it came on to the bridge without slacking its speed, at the rate of 40 miles per hour; the gap, 60 feet wide, was almost leaped by the engine; it struck the opposite pier without varying its line more than 5 inches, and buried itself partly in the central abutment. The tender turned bottom upwards and lodged fairly upon the locomotive. The baggage car then lodged in an upright position on the top of the tender. The smoking and mail car taking a sheer to the left, lodged upon the piles and bridging under the draw, forming an acute angle with the baggage car. The first passenger car dove, as it were, down between the smoking and baggage cars, the car behind it striking and splitting it in pieces, and partly running over the roof. This second passenger car was, in turn, broken in pieces and crowded over the piles, by the other cars in the rear, one-half of it falling into the draw and partly upon the car ahead of it. The engineer has been put in prison to await the result. The only excuse he makes is that he thought he saw the safety signal up. The scene was heart-rending, and the loss of life, we believe, is greater than has ever taken place by one railroad accident in our country. When will there be more morality in our public carriers.

Breaking up of an Iceberg.

When the immense iceberg commences to tumble to pieces and change its position in the water, the sight is really grand—perhaps one that can vie with an earthquake. Masses inconceivably great, four times the size of St. Paul's Cathedral or Westminster Abbey, are submerged in the still blue water to appear again at the surface, rolling and heaving gigantically in the swelling waves. Volumes of spray rise like clouds of white vapor into the air all around, and shut out the beholder from a scene too sacred for eyes not immortal. The sound that is emitted is not second to terrific peals of thunder, or the discharge of whole parks of artillery. The sea, smooth and tranquil, is aroused, and oscillations travel ten or twelve miles in every direction; and if ice should cover its surface in one entire sheet, it becomes broken up into detached pieces, in the same manner as if the swell of an extensive sea or ocean had reached it, and before a quiescent state is assumed probably two or three large icebergs occupy its place, the tops of some of which may be at an elevation of upwards of two hundred feet, having, in the course of the revolution, turned up the blue mud from the bottom, at a depth of two or three hundred fathoms.

Copper and Diamonds in North Carolina.

We are informed by Prof. C. U. Shepard, says the "Charleston Courier," who has just returned from a fortnight's exploration in the counties of Mecklenburg, Union, Cabarrus, and Rowan, that the prospect of an abundant supply of copper ore is afforded by the indications presented in the mines of those counties. The great metaliferous region known as Gold Hill, in Rowan, and which, next to the famous Dorne's Mine in this State, is the most productive deposit of the precious metal in the United States—is, perhaps, the most promising repository for copper thus far brought to light. Other places may hereafter prove equally rich; but the gold veins at Gold Hill, being already worked to a depth of three hundred and fifty feet, afford the most favorable opportunity in the country for judging of the character of that spot for copper—a metal which rarely shows itself in much richness at the top of the ground. Already, from the depths referred to, tons of merchantable copper ore are daily raised; and the indications are such as to lead the professor to predict that Gold Hill will very speedily acquire a character for copper as distinguished as that which it has long since established for gold.

The professor, while in Charlotte, was presented with a diamond, by Dr. Leventhorpe, a late graduate of our Medical College. That gentleman had lately discovered it on his estate at Pioneer Mills, and this is the second specimen of this precious gem found within the year in the county. Hitherto no special search has been made for the diamond, these specimens having been discovered in a manner purely accidental.

Unequalled Sailing—Short Passage.

The clipper ship Sovereign of the Seas arrived at this port on the 6th inst., in 82 days from Honolula (Sandwich Islands,) it usually requiring four or five months from these Islands. Besides this speed for the whole passage, portions of the time show a more remarkable performance, as the following items will show:—

The run from Honolulu to Cape Horn, a distance of 8,634 miles, was accomplished in 37 days. In 26 of those days, consecutively, the ship run 6,489 miles, and one of those days was distinguished by an extraordinary run of 430 miles. This is the greatest sailing recorded, the nearest approach to it being that of the Flying Cloud, which run in 26 consecutive days an average of 227 miles per day, while the daily average of the Sovereign of the Seas was 249 4-13 miles, or 22 miles a day more than the Flying Cloud. The best day's run of the Flying Cloud was 374 miles. There is no doubt of the above run of the ves- Seas, as it appears from the Sights and Calculations entered at large on Capt. McKay's Journal. A speed of 18 miles an hour for 24 hours—greater than was ever done under canvas.

Red Cedar for Hedges.

The "Rural New Yorker" has a correspondent who recommends red cedar for farm hedges, for the following qualities:—It bears pruning well. It is not subject to any disease. Thin, poor land is as good for its growth as better. Drought does not hurt it nor the coldest weather. Grain grows freely near it. It would furnish protection to our exposed fields from the winter's wind. It would yield a pleasant shade for cattle in summer, and would beautify the landscape. Nearly every one of these statements is contrary to our experience and well-known facts.

Barrow's Propeller.

Ebenezer Barrows, Esq., of this city, has taken measures to secure a patent for an improved mode of propelling vessels, and which is adapted for canals, as well as for river and ocean steamers; the mode adopted is as follows: a long rectangular trussed frame, with an octagonal stationary wheel hung in each end, is constructed upon each side of the boat to be propelled, and an engine attached to the shaft of one or both of these wheels, to propel them; passing over the entire circumference of this frame, and around upon each side of these octagonal wheels, is a series of smooth circular propelling rollers, made water-tight and hung at each end in bearings in an endless chain, which revolves around the rectangular frame; these propelling rollers are constructed in two parts with friction rollers between them, which friction rollers are set at a distance apart to correspond with the octagonal wheels at the end of said frame. Nearly one half of each rectangular frame is emersed in water upon each side of the vessel, and the boat is thus driven ahead by the action of the series of propelling rollers upon the water.

New Safety Whiffle[illegible] for Carriages.

A new method of co[illegible]ng whiffletrees for carriages, whereby the horses may be disengaged from the carriage by the driver at any time he may wish to do so, has been invented by Elisha Harvey, of Whately, Mass. The method employed by the inventor is the following. An additional short whiffletree or bar is attached in the usual manner to each end of the double whiffletree. The arms of these two bars or levers are of unequal lengths from the place where they are attached, the short heavy end of each bar extending but a short distance beyond the farther end of the whiffletree, where it forms a hook to which the single whiffletrees are attached; the longer ends of these bars extend nearly to the centre of the double bar, at which place they form a fulcrum upon a slide bolt or lock, which bolt passes through the whiffletree in front of the ends of the bars, and is retained there by means of a strong helical spring.—When it is desired to liberate the horses from the carriage, the slide bolt is raised by the driver by means of a cord or other convenient device, and the opposite end of the bar allowed to swing round upon an axis at the end of the double bar, and thus disengage the horse by liberating the single whiffletree from the hook. Mr. Harvey has taken measures to secure his invention by patent.

Improvements in Saw Mills.

T. L. Jones, of Natchez, Miss., has invented certain improvements in mills for sawing logs. Mr. Jones has a method of communicating power from the wheel or crank to the saw sash, by which considerable friction is avoided, and the mill rendered far more portable. The manner in which this is accomplished is by using a short pitman attached to the crank of the driving shaft, by means of an elbow or bent connecting rod. This prevents the pitman, although much shorter than those of the usual construction, from moving but a very short distance out of line with the saw sash. Mr. Jones has also taken the power to give the feed motion to the carriage directly from the driving shaft, instead of taking it from the saw sash, in the usual manner. This prevents the lateral motion frequently given to the sash, by attaching the feed to it, and, at the same time, gives an effectual and regular motion to the log. Measures have been taken to secure a patent.

Peruvian Guano.

The Board of Managers of the Maryland State Agricultural Society have appointed a committee to call the attention of the State Department of the national government to the present condition of the guano trade with Peru, and to adopt other measures with a view to throwing open the trade to unrestricted competition, in order to render the supply abundant, and secure a reduction in the price Good.

Heat and Cold.

For all that has been said by us on the subject of heat and its effects, there is still a great number who have no correct information to guide them, and to whom some standard knowledge will be a benefit. This opinion we have formed from the many letters we have received, relating to questions connected with this subject—a subject, indeed, which possesses a universal interest because it encircles every practical art in the world, and is only circumscribed in its relations by the universe itself. Man with all his powers ot mind and great experience of memory treasured up in the records of men during many centuries, is still a very ignorant creature. He knows absolutely nothing of natural causes. When he sees an apple fall to the ground, or a stone flung from a sling return to earth again, he says, "the cause of this is the attraction of gravitation." Truly spoken, but "what is gravitation?" Aye, who can tell us that. Well, it is just the same with heat; we know its effects, but what it is in itself, is wrapt in as much obscurity to our minds as what gravity is. We talk of heat and we talk of cold, but when we ask, "what is heat," we are answered, "it is the absence of cold, and when we ask, "what is cold," we are answered, 'it [illegible] absence ot heat.'"—Heat and cold is [illegible], the middle links of which only have [illegible]ndered visible to us. Extreme cold a[illegible]e human system in many ways li[illegible]me heat, but at the same time, they are generally opposites in their effects; great heat attenuates solids and renders them gaseous: while great cold will condense and solidify these. We think it is extremely cold when the thermometer falls to 32° Fah. below zero, and it is dangerous to walk abroad when the atmosphere is at that temperature; but artificial cold has been produced as low as 220° by Natterer, and 166° by Faraday. The greatest natural cold ever measured was 56° below zero. Ice melts at 32°, and this is called "the freezing point." A hot wind in upper Egypt has been found to be 117° or 19° above the temperature of human blood, consequently no man could live long in such an atmosphere. Alcohol boils at 173°, water at 212°. Tin melts at 442°, lead at 590°, and mercury at 662°; 980° is a *red heat*, and 1141° according to Daniell, is the heat of a common fire; brass melts at 1869°; silver at 2283°, and cast-iron at 3479°. These temperatures to produce the effects stated, have been established by good authority, and those of our readers who are not acquainted with them should treasure this up for present or future use.

SPECIFIC HEAT.—Equal bulks of different substances, such as water and mercury, require the addition of different quantities of heat to produce the same change in their temperature. It two similar glass bulbs like thermometers, the one containing water and the other mercury, be immersed at the same time in a hot water bath, it will be found that the mercury bulb is heated up to the temperature of the water bath in half the time the water bulb requires to be raised to the same temperature; when exposed to the air, the mercury cools twice as fast. These effects must arise from mercury absorbing only half the heat that water absorbs in being raised to the same temperature. If we mix equal measures of water at 70° and 130°, the temperature of the whole will be 100°, but if we substitute for the water at 130° an equal measure of mercury, on mixing it with the water at 70°, the temperature of the whole will not be 100°, but about 90°; the mercury loses 40° of heat, which only raises the water 20°. Hot mercury theretore possesses only one-half the quantity of heat that a like quantity of water does at the same temperature; this fact is expressed in scientific language by saying of bodies, *their capacity for heat*.

It is more convenient to express the capacities of different bodies for heat with reference to equal weights than equal measures. By experiment it has been found that a pound of water absorbs thirty times more heat than a pound of mercury in being heated to the same number of degrees; the *capacity* of water for heat, therefore, is thirty times greater than that ot mercury. The capacities of these two bodies are in the relation of 1000 to 33, and it is convenient to express the capacities of heat for all bodies in relation to that of water as 1000—such numbers are the specific heats of bodies. The specific heat ot water is 1000, ice, 513, iron 113 79, zinc 95·55, mercury is really 33·32, lead 31·84. In equal weights of air and water, allowing water to be 1, the capacity of air is 0·2669—in other words a pound of water has 3·74 times the capacity for heat which air has, steam is to 1 ot water, ·8470; carbonic acid is ·2124, a lower capacity than air. The capacity ot both ice and steam for heat, is less than an equal weight of water. The specific heat of a body, therefore, may change with its physical state. Air contains latent heat, for if it is condensed into one-fifth of its volume by a piston in a small cylinder, as much heat is evolved as will ignite some inflammable substances. As carbon acid gas has a lower capacity for heat than air, it would be cheaper to use—taking fuel into consideration—than hot air for moving machinery. But as mercury is easily rendered volatile, and as its capacity for heat is 33 times less than water, it would certainly save fuel to employ it as a substitute for steam. This is no new idea, it has already been tried. About 15 years ago a beautiful little boat was built somewhere about the west of England, with an engine propelled by mercury, which was converted into gas by heat and used like steam, and was then condensed by some arrangement and used over and over again. It made one trip to Liverpool, and when it arrived at Princes Dock, the whole crew had to be sent to the hospital in a dreadful state of salivation, and that was the last of the mercury boat.

[For the Scientific American.]

Carbonic Acid Gas a Motive Power.

As our attention has been for some time turned to carbonic acid gas as a motive power, and seeing an article in your paper of the 25th April, in reply to a correspondent on that subject, we take the opportunity of addressing you the following particulars on the subject.

At the meeting of the British Association at Newcastle, Eng., in 1838, Robert Adams, Esq., solidified carbonic acid gas by means of an apparatus consisting of a strong wrought-iron vessel, in appearance like a swivel gun, two feet long and six inches in diameter, suspended by trunnions on an iron frame; also a vessel similar in form and size, but mounted perpendicularly on a flat stand; there were two pumps worked by powerful levers, together with the needful valves and connecting tubes. Into the generator, or suspended vessel, proper quantities ot bi-carbonate of soda and warm water were placed; a long tube was also inserted, containing sulphuric acid, having its mouth closed with a screw valve. On the generator being rapidly whirled round on its trunnions, the sulphuric acid flows out and mixes with the solution of bi-carbonate of soda. The carbonic acid disengaged, having no room to expand, was condensed into a liquid. So far the apparatus resembles that first employed for the same purpose by M. Thellussier, in Paris, but stopping short here, Thellussier could only make use of about one-third of the carbonic acid disengaged, while Mr. Adams, by pumping it into the second vessel, obtained nearly the whole; on allowing this liquid carbonic acid to escape through a box, or hollow brass cylinder into the atmosphere, the instantaneous evaporation of one portion, caused it to absorb so much caloric as to solidify the remainder. The solid carbonic acid resembles in appearance and texture newly fallen snow or small hail; it evaporates rapidly, but not instantly, from the atmosphere of gas around it, preventing close contact; its intense coldness is not immediately felt, but the brass box in which it is collected, or the solid acid itself when long held, blisters the skin like hot iron; various experiments were tried with, it such as freezing large quantities ot mercury, &c. But the circumstance of most consequence in relation to its practical employment, is, that it can be reduced to a liquid by a pressure of 36 atmospheres, or a column of mercury 90 feet, and at a temperature of 150° the liquid acid exerts an expansive force of 70 atmospheres, or 1050 lbs. on the square inch; and every increase of a single degree of temperature augments the pressure by upwards of an atmosphere or 15 lbs. on the square inch. None of the carbonates gives so much carbonic acid as the bi-carbonate of soda or the bi-carbonate ot potash; 50 parts of the carbonate ot lime (marble and chalk) combines with 49 parts ot sulphuric acid, and gives 22 parts of carbonic acid. 76 parts of bi-carbonate of soda combines with 49 parts ot sulphuric acid and gives 44 parts of carbonic acid. A cubic foot of atmospheric air weighs 527 04 grains, one cubic foot of carbonic acid weighs 804·79008 grains. Having the same capacity for heat as atmospheric air, it embraces the principle of being as great an economizer of fuel as air. We consider that it can be economically employed as a motive power. As the carbonic acid can be used frequently, besides the sulphate of soda, formed in preparing the gas, could be sold to advantage, or the soda might be recovered and sold as washing soda. Some may object to the using of this gas on account of its deadly nature, but we are convinced that it can be used with as much safety as steam. And having such an expansive force, an engine propelled by it would not require to occupy more than the one-hundredth part of a caloric engine of the same power, and about one tenth of the steam engine. You will perceive at once its great superiority over any other motive power (including hot air and electricity) for long voyages. or on long lines of railroad, where fuel has to form a great proportion of the freight.

TWO CONSTANT READERS.

Paterson, N. J., May 2nd, 1853.

[The foregoing communication is a very interesting one, as it displays an acquaintance with chemistry, and at the same time it presents some plain practical information which may be new to many of our readers. When carbonic acid gas was first reduced to a liquid, Sir I. Brunel took out a patent to employ it in an engine, but it failed to realize his expectations. Mr. Salomon, of Cincinnati, took out a patent in our own country for an improved carbonic acid gas engine, two years ago, since which time no engine of the kind has been introduced here. It is no doubt much superior to air as an economizer of fuel, but it has never been found to economize both machinery, fuel, and other expenses, as compared with steam, neither is it as economical as water.

Storm Pointer.

MESSRS. EDITORS—In No. 23, present volume of the Scientific American, you published a statement how to make a "Simple Barometer and Storm Pointer," by G. I also saw, in an old German publication, a formula for the same purpose, differing somewhat from the above, as this writer adds camphor, and directs the vial to be hermetically sealed. I have tried both formulas and—failed, the sediment in the vial remaining perfectly quiet at the bottom in all weathers, storm or calm. Will your correspondent, "G.," state why his formula will not act as stated in his article? Or is there any one among the thousands of readers of the Sci. American who can give more light on the subject? If such a simple contrivance would indicate changes in the weather, as stated, "twenty-four hours before the tempest ensues," it would certainly be a very desirable and useful instrument.

Columbia, Pa. J. B. G.

[The only "Storm Pointer" on which we rely is a good barometer.—ED.

Dr. J. V. C. Smith, of Boston, says that immense crops of poppies are raised in Switzerland, not for the opium, but for the oil extracted from their seeds. This oil is beautifully transparent, extensively used in house painting, colorless as water, and when mixed with white lead leaves a beautiful surface that never becomes yellow. Now that linseed oil is rising in price, and as much of our land is unfit for the cultivation of flax, he advises the attempt at cultivating the poppy here, which does very well even on poor, sandy soil.

Sea Bathing in Paris.

A project is on foot in Paris which has for its object to give to the Parisians the refreshment ot sea bathing in the central part of the city. By the process of an hydraulic machine, placed on the still waters of Dieppe, the waters of the channel would be thrown into large pipes, which would carry it to Paris, and into a large basin placed in the centre of the Park of Mouceax. The expenditure is calculated at five or six millions of francs. The railway company from Dieppe to Paris have granted the privilege of laying the pipes all along the road, and the government has given to the undertaking the free use of the park of Mouceaux.

The benefits of sea bathing consist as much in breathing the sea air as rolling in the water.

Velocity of Rivers.

MESSRS. EDITORS—Under the heading of "South American Rivers," in a late number of the Scientific American, I have observed the following statement: "three inches per mile in a smooth straight channel, gives a velocity ot about three miles per hour." The same statement I observed many years ago in the "Pottsville Gazette," and as the statement cannot be true, only upon certain conditions, and no conditions being mentioned, exceptions may be taken to the statement. The velocity of rivers depends on several circumstances —the fall or rate of descent, the quantity of water, and the form ot the channel, as well as the conditions [illegible]moothness and straightness. The Ganges [illegible] said to have a velocity of about thre[illegible]er hour, with a fall of only four [illegible]mile, but with a mean hydraulic de[illegible]ty feet. The Ohio river, from Beav[illegible]Wheeling, has a descent ot 9½ inches per mile, and yet the velocity of the stream at the Wheeling "bar," where the velocity must be greater than the uniform flow, is less than 2½ miles per hour in low water, but its velocity has increased to nearly 17 miles per hour during great floods. The Miami River, in Ohio, which has a fall of a little more than four feet per mile, has a velocity of about 7½ miles per hour during ordina ry floods, but in low water I doubt whether the velocity reaches one mile per hour.

This is written only because the character of your paper may give more credit to the statement above quoted than it deserves, and consequently lead to error.

Dayton, Ohio. D. H. MORRISON.

[We certainly believe that smoothness straightness, and the fall, as given in our extract, covers all that Mr. M. speaks of, excepting the quantity of water, which certainly should always be taken into consideration. —ED.

Accident to Professor Liebig.

The "Augsburg Gazette" has the following from Munich, dated the 10th:—"Professor Liebig was last night giving a lecture on chemistry at the Palace, before Queen Maria, Queen Theresa, King Louis, the younger branches of the Royal family, and some persons belonging to the court, when a bottle of oxygen gas being improperly handed to him by his assistant, who took it for another bottle, an explosion took place, and the bottle flew into a thousand piece. Fortunately, the explosion occurred in an inner room, the door of which was open; still some fragments ot the glass passed through the door, and slightly wounded some members of the Royal party who were sitting in the tront rank. Queen Theresa was cut in the cheek, and the blood flowed in abundance; Prince Luitpold was slightly wounded in the forehead, Countess Luxburg in the chin, and Countess Sandizell in the head. None of these wounds will be of any consequence. The protessor was also slightly injured, having escaped with his life by a sort of miracle."

The £1000 left by Franklin to the city of Boston, to be let on interest to young unmarried artizans in sums not exceeding £100 sterling, now amounts to $15,280,55. Franklin estimated that it would reach $581,640 in one hundred years, but owing to losses it will probably reach about $400,000. One provision of the will was that when the fund should amount to $581,640, half a million of dollars should be appropriated to some public work, which should be judged to be of the most general utility to the inhabitants of Boston. The loans are now rarely applied for at all, and it is proposed that the fund be deposited in the Massachusetts Hospital Life Insurance Co., and in the Savings Bank of Boston.

NEW INVENTIONS.

New Rail for Railroads.

An improvement in the construction of rails upon those parts of railroads adjoining switches, has been constructed by J. F. Fanning, of Union, N. Y. The object of the improvement is to prevent the cars from running off the track in cases where the switch is not properly adjusted. The manner in which this is effected is as follows: each of the rails which connects with the switch is provided with long flanges upon the top at their inner edges, and guides or shorter flanges near their outer edges; this will render it nearly impossible for the engine to run off the track, even though the switch be moved considerably out of line with the adjoining rails, for if the switch be moved too far to the right, two of the wheels of the engine will bear up against the longer flange of the left rail, and the other two against the shorter flange or guide of the right one, and therefore, as it moves toward the terminus of the angle formed by the flanges of the adjoining rails, they will gradually be drawn toward the main or straight track, and be caused to fall or slide into the same. The like result will be prod[illegible], vice versa, in case the switch is move[illegible]ar, or to the left of a direct line with [illegible]ck. Considerable difficulty has [illegible] been experienced, and many acc[illegible]ve occurred, often, however, through [illegible] of care in passing railroad switches; should this be found to remedy the difficulty it will contribute considerably to the safety of railroad travelling. Measures have been taken by the inventor to secure a patent.

New Annunciator for Hotels.

A new Annunciator has been invented by Wm. Horsfall, of New York City, who has taken measures to secure a patent. The improvement relates to the construction and arrangement of the index plates. They are so constructed that each of them can be operated and its number exposed to view, and also the alarm sounded, by simply employing a vertical rod having a horizontal lifter or tripping arm, which extends underneath each of the swinging index plates, the said rod and arm being arranged in such relation to the rocking or swinging frame, which carries the alarm bell, that as either of the rods are raised for the purpose of tripping one of the index plates and exposing its number to view, the said frame and bell will also be raised, and the pendulous hammer allowed to descend some distance and consequently when the rod descends, which it does instantly after the index plate has been tripped, the swinging frame and its alarm bell will descend also and cause the short finger of the pendulous hammer to be operated upon by a lever connected to the arm which sustains the bell and the long arm or weighted end of the pendulous hammer to raise, strike the bell, and sound the alarm. Another feature in this invention relates to the method of throwing the index plates, either separately or a number together, back to their proper places, after the number has been seen and attended to. These arrangements for constructing and operating Annunciators are quite simple and convenient. In case any part should become disarranged, it is more easily repaired in this structure than in the common arrangement.

Corn and Seed Planter.

An improved machine for planting corn and other seeds, has been invented by R. C. Wrenn, of Mount Gilead, Ohio. The novelty of this invention consists in discharging the grain at regular intervals, and in hills at any desired distance apart, by means of one or more cams upon the face, and near the periphery of the driving wheel. These cams operate certain slides which convey the grain from the hopper to the hollow drill tooth. After the discharge of the grain into the drill is effected, the slides are instantaneously brought back to their natural position by means of elbow shifters attached to the slides and operated by the cams. By this very simple arrangement the necessity of employing shifting levers or other complex machinery, to be operated by hand, is dispensed with. Mr. Wrenn has taken measures to secure a patent.

CAMP'S IMPROVED CHIMNEY VENTILATOR.

The improvements in Chimney Ventilators illustrated by the above engravings were patented by Mortiner M. Camp, of New Haven, Conn., August 17, 1852.

Figure 1 is a perspective view of the whole ventilator, and figure 2 is a vertical section through the centre, with the whole of the two wheels, *c c* and *e e*, shown in perspective. The same letters represent the same parts in both engravings.

A, figure 1, is a cylinder with openings cut for the admission of currents of air, and a spreading or conical base, D, which covers the lower portion of the ventilator. Guide plates or buckets, B, direct the current of air coming from any direction through the rectangular openings, C, upon the spiral vertical fan wheel, *c c*, hung upon the shaft, *a a*, in bearings, *b b*; F is an inverted hollow cone with a cylindrical base, which forms the base of the ventilator, and within which is the spiral fan wheel, *e e*, upon the same shaft with *c c*, and similar to it in construction, except that the latter is inverted upon the shaft in order to

Figure 1.

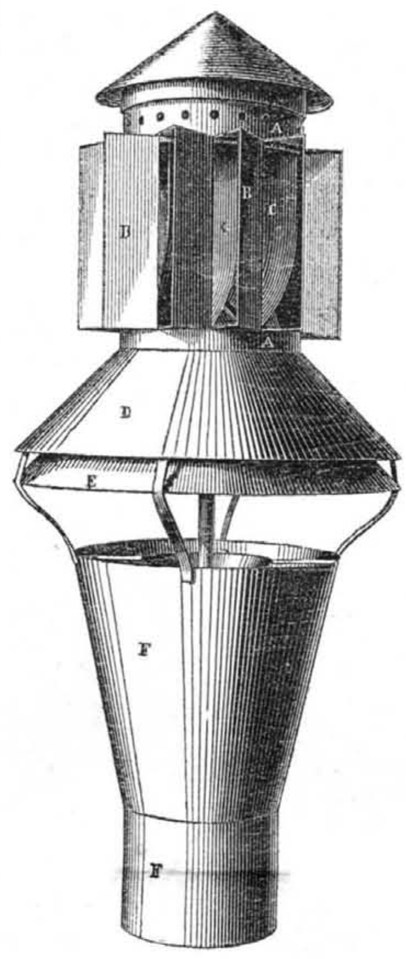
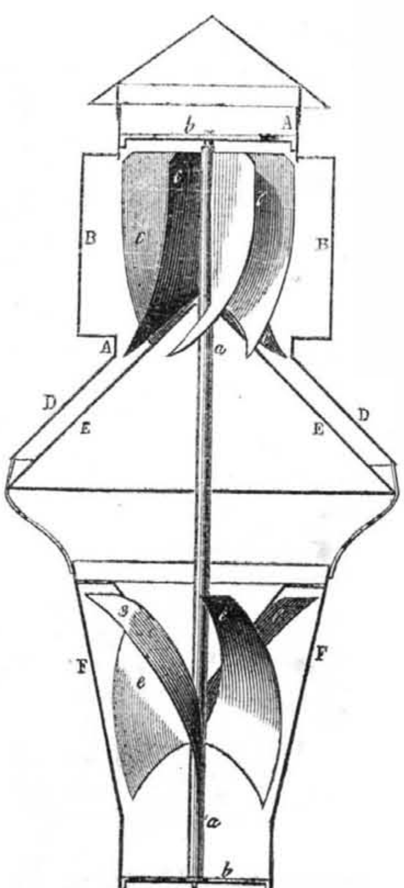


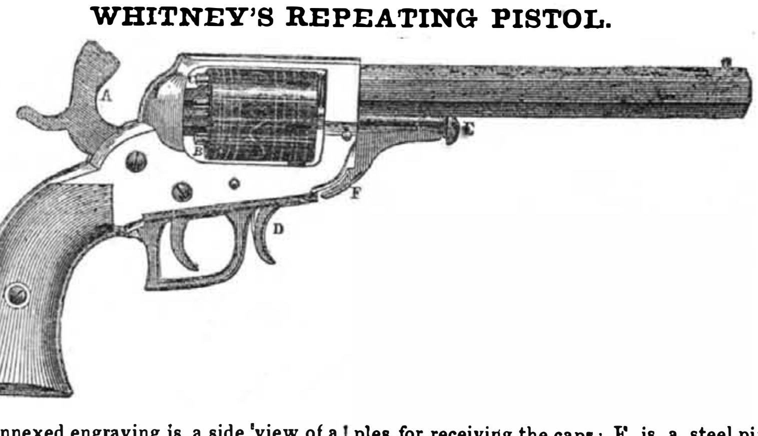
Figure 2.



direct the current in an opposite direction. The wings of these fan wheels are broader at their bases or where they are attached to the shaft, so as nearly to fill the cylinders in which they revolve, but taper toward their opposite ends, where they are curved and pointed so as to fit around the points of the hollow cones over which they turn in the manner represented in figure 2. Whenever a current of air strikes the upper fan wheel, which will always be at an inclination to its shaft, being directed in its entrance through the cylinder, a rapid motion is given to both wheels, and the air from the upper cylinder is carried downward by the spiral wings, and passes out again between the hollow cone, E, and the base, D, of the cylinder, A. The same motion being communicated to the lower wheel draws the smoke upward and tends to expel it from the top, between the hollow conical portion, E, and the smaller inverted cone, around which the wheel, *e e*, revolves, as shown in figure 1. This arrangement will doubtless preclude the air from passing down the pipe, F, while the wheel, *e e*, is in motion, which will always be the case when there are currents of air sufficient to drive it.

More information may be obtained by letter addressed to Cannon & Brother, 134 Chapel street, New Haven, Conn., who are sole agents for selling rights, and who will attend promptly to any communication.

WHITNEY'S REPEATING PISTOL.



The annexed engraving is a side view of a new Repeating Pistol, invented by E. Whitney, of New Haven, Conn., who has taken measures to secure a patent for the same. It is exceedingly simple in its construction, and merits the attention of all those engaged in the manufacture, practice, and use of fire arms. A is the hammer which is made in the usual way; B is a revolving charge cylinder, the most simple and easy managed we ever saw. There are six charge chambers in the front end of this cylinder, and C are the nipples for receiving the caps; E is a steel pin which passes through a central orifice in cylinder, B, into the back of the stock, and serves as the spindle or axis on which the charge cylinder rotates. This pin is held in its place by a trigger pin, F, which has a sneek at its outer end projecting into a notch in pin, E, and holding it fast. Small dark notches are represented on the side of the cylinder near the front end. A spring trigger, D, projects through the plate of the stock into one of these notches, and holds the charge cylinder at the proper point with a charge chamber opposite to the barrel, and prevents it rotating. When a shot is fired, by pressing on D with the finger, the cylinder is released, is turned with the left hand on its axis pin E, and when the next charged chamber comes opposite to the barrel, the spring of D, projects into a notch and retains the cylinder at that point.

By pressing the finger upon F, the sneek releases pin, E, which can be drawn out in a second, and cylinder B, taken out to recharge, or half a dozen of such cylinders may be kept charged in one cartridge box or pocket, and 30 shots fired off with great rapidity, for it is but the work of a few moments to take out a discharged cylinder, and put in a new charged one.

Mr. Whitney is the son of the famous inventor of the cotton gin, and we must say that he has constructed the most simple and effective revolving pistol that has yet been brought under our notice. His pistols are made of the best materials; the parts are few and simple; the barrel and cylinder are of the best cast-steel, their shooting qualities are excellent, and we understand that they are sold at very reasonable prices.

More information may be obtained from the manufacturer by letter [illegible]therwise.

New Process for Obtai[illegible]rburetted Hydrogen Gas fro[illegible]l Tar.

The extensive produ[illegible] carburetted hydrogen gas from coal or ro[illegible] tar, or other like substances, has been thought by many good chemists to be quite impracticable, one of the difficulties to be overcome is that of obtaining a retort so constructed that the coal tar, which is made to enter it in fluid form, will not cool it sufficiently to destroy the product, and cause an incrustation of the tar upon the sides of the retort. This difficulty has been obviated by Stephen Meredith, of Erie, Pa. Mr. Meredith has constructed a novel retort for the accomplishment of the object above stated. It is so formed that a heated surface is constantly presented to the fluid tar. This is effected by placing within the retort, longitudinally, a cylinder which may be made to revolve in bearings, working in stuffing boxes, to prevent the escape of the gas from the retort. A pipe or tube passes longitudinally into the retort and over the entire length of the cylinder, the portion of the tube within the retort being perforated to permit the fluid tar, which enters the retort through the pipe to fall upon the cylinder. As the cylinder revolves it constantly presents a new surface to the heated retort, thus the tar is prevented from forming incrustations and burning on the sides of the retort, but is readily converted into gas. Measures have been taken by the inventor to obtain a patent.

New Reversable Stove pipe Collar.

R. R. Finch, Jr., of New York City, has invented and taken measures to secure a patent for the above. By means of this improvement in the construction of stoves, the necessity for an elbow is, in most cases obviated; a collar is placed over the flue of the stove and attached to it by a button, this collar may be inclined in various directions at pleasure, in order to receive the stove-pipe from the chimney at any angle desired. The pipe may pass from the stove horizontally, or extend up any desired distance before it enters the flue of the chimney, the change being effected without the use of elbows, as in the usual manner.

New Process for making Daguerreotype Plates.

An improvement in the construction of these plates has been invented by Geo. Englehard of New York City. The method employed by him is this, instead of forming the base of the plate of copper, and then coating it with silver, a pure zinc plate is used for the electrotype process, or a zinc plate first coated with copper and then with silver, and afterwards polished in the usual manner. Mr. Englehard thinks these plates take impressions more readily and leave a finer picture than those made by the old process. The expense of making these plates is less than those made of copper. The inventor has taken measures to secure a patent.

A few drops of kreosote on brown paper, put in the holes of rats, it is said, will drive them away.

Scientific American

NEW-YORK, MAY 14, 1853

The Morality of Public Carriers.

No people in the world travel so much as we do in America; a greater regard for the safety of life, therefore, and better appliances and modes of protecting it, should exist among us than among any other people. Instead, however, of a sacred regard for life, and well arranged means to protect it, by those who are the carriers of our travelling people, we behold on every hand the most daring recklessness and the most reprehensible want of judicious and safe arrangements for the security of life and property. A few weeks ago the dreadful intelligence was conveyed to us that one of our steamships on the Pacific had struck a ledge of rock, near a desert island, and then took fire, by which sad calamity more than one hundred of our citizens lost their lives. The cause of this accident may have been carelessness, and it may not; we cannot tell; but at present we believe that more care would have prevented it. On the night of the 25th ult. two railroad trains met at a crossing on the Michigan Central and the Southern Railroad, near Chicago, by which more than twenty persons were killed and nearly one hundred severely wounded. The Central and Southern Railroads cross one another at a place about ten miles from Chicago, and it seems a bad feeling or misunderstanding has existed between the two companies. There are no definite arrangements between them, as to the time for the trains of each to cross the point of intersection: the engineer of one train must look before him in fear and doubt, to see that no train is approaching. On the night mentioned, the train of the Southern road was two hours behind time when it left Chicago at 9½ o'clock; on thundered the engineer with his train, to make up for lost time, at the rate of 40 miles per hour, when at the solitary spot—the only intersecting one on the road, he met the central train without a lamp, going at the rate of five miles per hour. The casualty could not be called a collision; the fast train crushed through part of the central train, strewing its path with the mangled bodies of the dead and dying. The accident, we believe, is one of the most horrible and culpable that has occurred on a railroad in our country. A Coroner's Jury in Chicago found the conductors and engineers of both trains guilty of gross carelessness. But what of this? Whoever heard of a guilty public carrier being punished in our country? It seems to us that there is not enough of morality in our laws to do it; if there is, why is it never done?

On the night of the 29th ult., the steamboat "Ocean Wave" took fire from her furnaces, on Lake Ontario, about fifty miles from Kingston, C. W., by which 28 persons lost their lives. There can be no doubt that gross carelessness was manifested in the construction of the fire-rooms of the boat, or this accident would not have taken place. When we consider that so much of American life and property is intrusted to the care of commanders of vessels and steamboat engineers; to conductors of railroad trains and their engineers, these men should form the most solid, careful, able, cautious, and moral men in our whole country. We do not say that they are less moral than the generality of our fellow citizens, nay, they are far above many, but they should *all*, as we have stated, rank high for moral qualities. The different systems of public carrying has a tendency to deaden moral perception and feeling. The continual attention, day and night, Sunday as well as Saturday, required of those who carry passengers on rivers, lakes, seas, and by land, operates injuriously upon their consciences. Engineers of railroad trains and steamboats are generally careful men; they know they are the most liable to suffer the evil consequences of any neglect on their part—their employers are most to blame, for they, in too many cases, demand too much from them. The state of our railroads,—their construction in reference to numerous crossings, &c., tends to distract the attention of locomotive engineers—they have too much to look after at once. Can any person doubt that the construction of the two railroads, crossing one another where the foregoing accident took place, was not the real cause of such a sacrifice of human life. Would the accident ever have taken place had these opposing roads not stupidly and wickedly intersected one another? It would not. Let us look well, then, to our systems of public carrying—on land and sea—and see if the moral evil is not in them. We believe it is; and as an evil tree cannot bring forth good fruit, neither can conductors of trains nor engineers prevent accidents when they are themselves but the instruments of bad systems.

While we say this much in respect to bad systems, let us also say that unless proper persons—moral conductors and engineers—are employed on our railroads, the most perfect systems will not prevent accidents. Of this we have had sad evidence by another and more horrible railroad accident than the one referred to. An account of this accident will be found on another page, and from the evidence presented, it appears to us that the real cause of it was extreme recklessness on the part of the conductor and engineer—a fearful exhibition of the want of morality in public carriers.

Lightning Conductors.

At this season of the year we generally have some inquiries about lightning conductors, such as their best form, the best substance, its thickness, and how to erect them. What a change has taken place in the minds of men respecting lightning, since the discovery of its identity with electricity by the philosophical Franklin. A bead of amber was, at one time looked upon as possessing a mysterious relation with the spirit world, hence the old oriental stories of magic rings, &c. The Roman soldiers looked with awe upon the lights that were often seen dancing on the points of their spears; and sailors looked on with wonder at the gleaming fires—their "Castor and Pollux,"—which oftentimes played around the "main truck."

The discovery of electricity by Stephen Gray, in 1720, a little over a century ago, marks an important era in physical science; but the most important discovery connected with our text, was that made by Franklin to which we have alluded. This discovery was one of the most romantic with which we are acquainted in the whole history of philosophy. How grand the noble old philosopher printer looms up before the mind's eye, standing in his sober brown coat, gazing with his calm contemplative face, upward to the tiny kite which he had raised to lure the lightning bolt from the dark thunder chariot, and lock it to the floor of mother earth. At that moment a new science was born—that of lightning conductors; Franklin was the modern Prometheus, who stole fire from heaven. Further researches proved that the earth and the air were equally under the influence of electricity, and that it was an all-pervading element. It was shown that no body existed in nature through which this subtle principle was not diffused,—that changes were constantly being produced by the interference of other physical powers, and thus, in the efforts made to restore equilibrium, we have manifestations of electrical phenomenon—lightning. During every stage of animal and vegetable growth, electricity is either absorbed or given off, and no change can take place in the form of matter without affecting a change in its electrical conditions. When water is converted into vapor by intense solar influence, electrical equilibrium is disturbed, and in nature's efforts to restore the lost balance between earth, and air, we have thunder storms. Electricity accumulates and floats in clouds, and unless it is quietly discharged or conducted back again to earth when the cloud becomes overcharged with its artillery, it bursts forth in fury, and sometimes proves very destructive to the persons and property of the children of men. When lightning strikes a tree, in passing to the earth from a cloud, it oftentimes splinters it in pieces; it never passes by the solid matter upon which it falls; it endeavors to find its way to the earth by the interstical spaces between the particles composing the solid object; when these channels are insufficient to convey it, they are thrown apart, and the tree, house, or other object struck, is split in all directions.

There are certain bodies which, by their peculiar molecular construction, have the property of allowing this fluid to pass through them freely, and any of these bodies, of sufficient size to convey all the electricity of a thunder cloud to the earth, if placed in proximity to it, will pass the same as quietly and conveniently, and harmlessly, to the earth, as a pipe conveys rain water from the roof of a building. These bodies are called lightning conductors; Franklin was the first to apply them—his practical mind always looked to the useful, and this was one of his most useful discoveries.

A copper or iron rod, erected to project above the highest point of a building, and conducted down to some moist part of the earth, performs, as we have stated, the same office for lightning that a gutter does for rain water in conducting it to a cistern from the roof a house. Copper makes the best lightning conductor—there is no fear of having it too thick: Faraday says, "the solid section is the grand object." It has hitherto been held by many to be a scientific fact, that the surface was everything in a lightning conductor, hence twisted iron rods and flattened strips have been erroneously employed in place of thick rods of uniform diameter throughout. If we take a wire, and form a galvanic circuit with a strong battery, if one part of the wire is thinned out, or is made of a different metal, such as an iron link in a copper chain, the thin part will be intensely heated, and so will the iron link. A lightning conductor, therefore, should be of a uniform thickness below the upper point, and should be made of one kind of metal from top to bottom. An iron rod may be tipped at the point with silver or copper. The principle of constructing and putting up lightning conductors, is very simple; any person can do so, or give directions to do so, who pays the least attention to the principles we have laid down. The thickness of an iron one, we believe, should at least be half an inch in diameter, but rather let it be a thick wire, than to have none at all. The stays to bind the conductor to a chimney or the side of a house, should be non-conductors, such as thin strips of metal driven into dry varnished pegs of wood, and the conductor should always present the greatest amount of metal surface and section; and it should terminate in some moist part of the earth, such as a well or cistern. A good system of lightning conductors might protect any extent of country from thunder storms. Science is correct on this point, and in the South of France the vine growers now protect their vines from devastating hail storms produced by the sudden congelation of the water of the rain cloud when robbed of its latent heat by sudden electrical discharges. This they do by raising lightning conductors over their gardens; where these are plentifully distributed, hail storms are now scarcely known in places where, at one time, they were quite frequent. So much has man gained by the flight of a kite from the hands of an American philosopher.

Where is the Ericsson?

We have received a number of letters making inquiries about the Ericsson, such as "where is she?" "when is she going to sea, and to what place?" "what is the matter with her?" &c. We do not like saying so much as we have done upon this subject, and were it not for the numerous letters we receive respecting it—showing how interested a great number of our readers are—we would not say another word on the subject at present. It has already been mentioned in our columns, that the Ericsson was to get in furnace crown plates of cast-iron in place of those first put which were of plate wrought-iron.

We quote the following extract from the "New York Tribune," the paper which said, after her second trial trip—"Watt and Fulton belong to the past—Ericsson is the ruling genius of the present and future—the days of steam are numbered."

"This ship is now lying at her dock in Williamsburgh, just above the Grand street Ferry. Important alterations are going on in her machinery at Hogg & Delamater's foundry, which the owners are confident will considerably increase her speed. She is to be ready to sail for London, on her first passenger trip soon after the first of July, at which time the improvements now going on will be completed, and she will be in order throughout. Capt. Ericsson and some of the principal owners will go out in her to Europe. She can accommodate about two hundred passengers."

It is nearly two years since the Ericsson was commenced; and yet, not one penny has she earned for her owners. We are really sorry that she has not done better so far; the loss of interest on the aggregate cost of her hull and machinery for one month, must be a large amount of itself.

We also quote the following from the "New York Evening Post," of the 3rd inst.:

"We have received the following note from Capt. Ericsson, in relation to the caloric engine, which he has been constructing for the Evening Post:'

NEW YORK, May 2nd, 1853.

Dear Sir—I have just received information from my agent in France, that unless a caloric engine shall be in actual operation there before the 20th of June next, my patent-right for that country [illegible]ll be forfeited. The patent laws of [illegible]ll the countries of Europe require th[illegible]milar cases, model engines shall be p[illegible]thin a given period. Such we have [illegible]red to forward in due time; but [illegible]ons in France in relation to foreign [illegible] it appears, demand imperatively that the machine shall be in practical operation, as stated. Under these circumstances, it becomes indispensable to forward an engine to France by the Humboldt this week, and as the caloric engine we have constructed for your printing establishment is the only one completed, I am compelled, most reluctantly, to solicit your permitting me to employ the same for the purpose stated.

If you will kindly grant this request, I will lose not a moment in constructing another engine to take the place of the one now ready.

I am, dear sir, respectfully, your obedient servant, J. ERICSSON.

Of course, we cannot hesitate to comply with Captain Ericsson's request. Much as we regret the inconvenience and disappointment to which it will subject us, they will not deserve to be weighed a moment against the consequences of a forfeiture of the patent for this engine in France, which would be the inevitable consequence of our refusal."

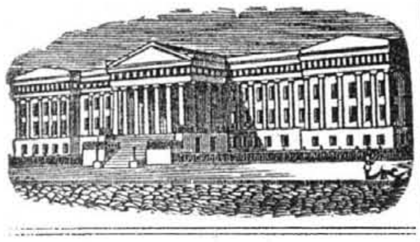
There is something which we cannot account for in the above letter, as it stands, in contradiction to our understanding of the French Patent Law, which we shall quote:

"Sec. 32. A patentee will be deprived of his rights under the following circumstances:—(1) If he should fail to pay the annual payment before the commencement of each year of the term of the patent; (2.) if he shall not put his invention or discovery into execution within two years from the date of the signature of the patent, or if he shall cease for the space of two consecutive years to work the patent—unless, in either case, he can justify his inaction; (3.) *if he introduces into France objects made in a foreign country, similar to those protected by his own patent.* Models of machines, the introduction of which is authorized by the Minister of Agriculture and Commerce, are excepted from the operation of the preceding paragraph."

By this very law, as it appears to us, Capt. Ericsson, instead of protecting his patent in France, by sending the engine there which was made for the "Post," actually comes up to the very letter and conditions of forfeiture.

We have noticed an editorial article, this week, in a magazine professedly scientific, on the Caloric Engine, which exhibits such an utter want of scientific knowledge, that we cannot pass it by without comment, but we have not room to do so in this number.

There is a curious ordeal in India, which shows the action of fear on the salivary glands. If a wrong is committed, the suspected persons are got together, and each is required to keep a quantity of rice in his mouth for a certain time, and then put it out again; and, with the greatest certainty, the man who had done the deed puts it out almost dry, in consequence of the fear of his mind keeping back the saliva.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 3, 1853.

REVOLVING FIRE-ARMS—By Robert Adams, of London, Eng. Patented in England Feb. 24, 1851: I claim combining with the frame and the hammer, the spring, for holding the hammer back, as stated.

I also claim the sear attached to the trigger, by a swivel joint, and acting on the hammer, substantially as described.

I also claim the stop or projection on the trigger, for holding the chambers in position, when firing, as described.

EXERCISING MACHINES—By Richard L. Hinsdale, of New York City: I claim the bows on their hubs, and the strings and handles, either alone or in combination with the spring and vibrating platform, as described.

I also claim the elastic reciprocators made and operating as describe.

Also the bows on the brack[illegible] their equivalents, either alone or in comb[illegible] the spring platform, for the purposes [illegible], as described.

MOULD CANDLE APP[illegible] Kendall, of Providence, R. I. [illegible] 12, 1852: I claim, first, [illegible] travelling and fixed railw[illegible] ds are transferred from plac[illegible] d in the process of casting [illegible] with an oven for heating th[illegible] pot to prepare the fat for cast[illegible] ratus for drawing the candles from the m[illegible], as set forth.

Second, in combination with a series of moving stands of moulds, I claim the counterpoised hooks or the equivalent thereof, arranged and operating as set forth, to aid in drawing the candles and centering the wick in such manner as to dispense with much of the care and skill heretofore required for the performance of this operation.

Third, I claim an elastic or a yielding cap for the lower end or tip of the moulds which performs the two functions of stopper, and the friction brake to stretch the wick, as set forth.

Fourth, I claim the wick clamp, constructed and operating as set forth.

MANURE CARTS—By Daniel Reid, of Washington, N. C.: I claim the measuring valve apparatus beneath the lower hoppers, in combination with the said hopper for discharging manure in hills, as set forth

CORN SHELLERS—By G. W. Reid, of Evansville, Ind.: I claim the combination and arrangement of the sloping longitudinal slat screen, and the transverse slat screen, for the rapid and thorough separation of the corn from the cobs, as they are thrown from the concave by the shelling cylinder upon the said combined screens, as set forth.

SAWING BARREL HEADS—By P. J. Steere, of Cheshire, Mass.: I claim the finger, in combination with the movable shaft, for the purpose of converting the curvilinear motion of the saw into a rectilinear motion, as described.

MACHINES FOR SHRINKING HAT BODIES—By J. S. Taylor, of Danbury, Ct.: I claim the process of shrinking or sizing hat bodies by passing them longitudinally into or through a chamber, formed by placing several cylinders or rollers (having concave or other denomination of surfaces) in such a proximity as to form the said chamber, as set forth.

REPEATING FIRE ARMS—By C. N. Tyler, of Worcester, Mass: I claim, first, arranging the cock in such a manner that it may be raised and will stand up, without being held by a sear or catch, and may then be gradually lowered again, without tripping to fire the charge, or may be tripped to fire the charge at the option of the operator, whether the devices employed be such as are described, or the equivalent thereof for producing the same result.

Second, the movable stop, operated upon by stud or button, protruding through to the outside of the stock, in combination with a fixed rest, and the jack, as described, for the purpose of preventing the jack being thrown far enough back to clear the tongue, through which the trigger acts upon it, whereby the escape of the driver or hammer, is rendered impossible while the stop is in operation.

Third, I claim the magazine constructed with a self acting driver, which places the cartridges in succession in front of the discharger, and with a discharger that will draw itself back and place the pulling rod in the proper position for transferring the cartridges into the breech, so that they may be transferred, as required, by simply pressing with the finger upon the pulling rod.

APPARATUS FOR DRAWING WATER FROM WELLS—By S. R. Wilmot, of New Haven, Ct. (assignor to Joseph Kent, of Baltimore Co., Md): I claim the projecting stud, in combination with the spring, and grooved pulleys, for the purpose of contracting the spring, by the weight of the bucket, and causing the pulleys to grasp firmly the way in the manner set forth

RAILS FOR RAILROADS—By Patrick O'Reily, of Reading, Pa Ante-dated Nov. 3, 1852: I claim the divided or double plate rail, as described, which is composed of a flanged arch or bridged rail, of the usual form, and about half the usual thickness and weight, with another rail of similar external form, thickness, and weight, on which it rides, the under side of the arch of the upper rail or rider forming a groove to fit over and rest upon the arch or tongue of the lower rail, the flanges of the upper rail resting upon and fitting those of the under rail, and the spike holes of the two corresponding, so that the same bolts or spikes will secure them firmly together, and to the foundation, the compound rail thus formed and proportioned having a double bridge and a double base, the two portions of which reciprocally support and strengthen each other

Also, the method described of strengthening the joints of the ordinary bridge or rail, while leaving its middle of adequate strength, by moving a longitudinal section of its inside equal to about half the weight of the rails, half its length endwise, so as to break joint with the outside, or constructing the rail in two parts, to correspond in form and position with the two parts of the inner half, where divided from the outer, and moved as aforesaid, whereby the joints of the upper rail are rendered as capable of supporting the load at its middle, and the whole made stronger, with a given quantity of material than by any mode of construction hnretofore known.

RAILS FOR RAILROADS—By J. D. Steele, of Pottstown, Pa. (assignor to C. E. Smith, of Philadelphia, Pa.) Ante dated Nov. 3, 1852: I claim the construction of a rail in two parts, which is composed of a flanged ∩ or bridge rail of the usual form, with another rail or splice plate, of similar external form, on which it rides, the under sides of the arch of the upper rail forming a groove, to fit over the arch or tongue of the lower rail or splice plate, and the flanges of the one overlaying and resting upon the flanges of the other, and the flanges may be rivetted together, the spikes or bolts fastening the rails at large to their bearings, may be made to pass through the flanges, and thus perform the double office of fastening them together and to their bearings, and the interior rail may have a solid or hollow tongue or rib, and it may have a length sufficient to give it a bearing on three sills or cross-ties directly under and adjacent to the joint, or it may be equal in length to the upper or main rail and break joints with it, as may hereafter be found most desirable.

DESIGNS.

GRATE FRAMES—By James L. Jackson, of New York City: three designs.

GRATE FRAME AND SUMMER PIECE—By James L. Jackson, of New York City.

Faraday on Static Electricity.

The following is a short abstract of a lecture recently delivered by Faraday before the Royal Institution, London, and taken from the "London Expositer:"—

The branch of the subject to which he directed attention in this introductory lecture, was the different means by which what is called static electricity may be excited, the term "static" being applied to distinguish that condition of electric force which is excited by friction on any insulated medium, from the electricity which is developed in a current state by voltaic action. The profe sor strenuously endeavored, in the first place, to impress on the minds of his auditors the great importance and the extraordinary character of the force called into action by merely rub[illegible] a glass rod with a piece of silk; that force being sufficient, when operating on light bodies, to overcome the attraction of the earth. Several experiments were exhibited to show the excitement of electricity by the least possible friction; among which the most curious was the divergence of the gold leaves of an electrometer by the movement ot Professor Faraday's feet on the carpet whilst he touched the top of the instrument. With a view to prove that the bodies called electrics do not derive the power of exciting electricity from similarity of their constituent particles, the two highly electrical substances, gutta percha and collodion, or gun cotton, were adduced, and by the different results of their combustion, the opposite characters of their elements were exhibited. It has been generally supposed that in the excitement of electricity by friction, it is necessary that the rubber should be of a different material from the electric; but that this is not an essential condition was illustrated by the following experiment:—Two strips of dried flannel were rubbed against each other transversely the assistant holding one of the strips tightly stretched whilst Professor Faraday rubbed the other briskly across it, and on applying the latter to the electrometer, the leaves diverged. Another experiment exhibited in a very striking manner the excitement of electricity that takes place whilst combing or brushing the hair when dry. A long lock of hair combed out with a tortoiseshell comb exhibited strong electrical indications by the hairs diverging separately from each other, and when the electricity was collected by an insulated metal plate, it served, after a few repetitions, to charge a small Leyden jar, by which gunpowder was fired. The evolution of static electricity by evaporation was illustrated by pouring water into a small heated vessel placed on the electrometer. This mode of exciting electricity possesses peculiar interest from its being supposed to be the cause of the electrical phenomena of the atmosphere; though whether this arises from mere change of state, or, as some philosophers imagine, from chemical action, remains a problem to be solved. The professor stated, however, as a circumstance favorable to the latter hypothesis, that by no experiment yet devised has the excitement of electricity been rendered manifest by evaporation at the temperatures of the atmosphere. A small boiler was on the lecture table, for the purpose of showing the excitement of electricity during the emission of high pressure steam; but this means of excitement, though apparently opposed to all others previously known, may be resolved into excitement by friction, caused by the forcible rubbing together of the particles of condensed steam as they issue from the jet. Professor Faraday did not, however, allude to the searching investigations and ingeniously contrived experiments by which he established this interesting fact; a satisfactory evidence of which is, that when the injection pipe is heated, to prevent condensation, the excitement of electricity ceases. The last means of electrical excitement noticed was the unequal expansion of some crystalline bodies by heat; which was illustrated by experiments with tourmelin, the substance in which this property was first observed.

Strange Steamer.

On Friday last, while visiting the steamboat wharf, a curiosity was presented to our view in the shape of a new steamer, designed by the well-known engineer, Mr. David Napier, of London. We were naturally anxious to witness the performance of this new acquatic traveller, and having a few hours to spare at the time, we started with her on a trip to Dumbarton and back. She is about the same length and breadth as the other Dumbarton boats, but in other respects differs widely from any of them, or any of the other boats on the Clyde. There is a swell on each side of her, under which the paddles work, but no elevation in the shape of paddle-boxes, which are so small in diameter, that they do not rise much above the level of the deck; her bulwarks running all round on the level; her engine-room is elevated about three or four feet above the deck, and immediately behind it, and about the same height, is a platform for the pilot, who steers her with a horizontal iron wheel of simple construction. Close by the pilot there are two long iron handles coming up from the engine room, by which the captain regulates, stops, or reverses the motion at pleasure and with ease, the engineer having nothing to do with that process as has hitherto been the case.—We will not attempt any minute description of the engine; suffice it to say that it stands in a small space—perhaps that of a parlor table, and bears no resemblance to any engine we have ever seen previously. Its outward appearance is a somewhat complicated mass of pipes, with two horizontal cylinders, or steam chests, into each of which a large slide works perpendicularly. The paddle shaft emanates from the ends of the steam chest or cylinder, and has four eccentrics on it, which appeared to do the work of cranks. The paddle wheels have only four floats on each. She made the down run in one hour and forty minutes, and the up in one hour and fifteen minutes—stopping at Renfrew in both cases. The engineer told us that he expected a much higher speed yet—that being her first day; besides he informed us that he required only one wagon of coals to perform two trips from Glasgow to Dumbarton and back.—What will be the result of this scheme we know not, neither are we prepared to give any opinion on the engine. We are favorable to the small number of floats, providing the diameter of wheel was much larger, and the floats of a better form.

[The above is from the "North British Mail." The distance which she made in one hour and fifteen minutes is at least 23 miles; this is fast running, but not quite as fast as some of our North River boats.

Ship-Building on the Clyde.

The "North British Mail" says, there are at present 100 vessels in course of construction on the Clyde, and of these only 6 are timber-built, all the rest being built of iron. It is also notable that these iron vessels consist both of steam and sailing vessels, though the former class preponderates. The tonnage of the ships now in construction on the Clyde amounts to upwards of 60,000 tons. The engines of the steam part of this great fleet have an aggregate of more than 14,000 horse-power. The probable value of the whole, though necessarily inexact, cannot be much short of £2,000,000 sterling! Yet, in a few months, this enormous amount of shipping will be off the stocks, and its place supplied by a new production, equally valuable. The number of workmen employed in building the vessels and making the machinery is about 15,000. The number of hands employed in raising the raw materials from the basin of the Clyde within a circuit of 20 or 30 miles, for these and similar great works, is still more immense. Another most gratifying feature of the ship-building trade of the Clyde is, that the employers in nearly all the establishments were workingmen themselves within the last thirty years. Most of them had attained the period of middle life before they turned their attention to iron boat-building at all. The men are not only the architects of their own fortunes, but the creators of a new branch of industry.

Recent Foreign Inventions.

Improved Treatment of Tin Ores.

Mr. John Mitchell, of Calenick, Cornwall, has just specified his patented improvements in purifying tin ores, and separating ores of tin from other minerals. The invention consists in a mode of applying common salt for the purpose of purifying tin ores, and separating ores of tin from other minerals. The invention consists in a mode of applying common salt for the purpose of purifying tin ores, and separating therefrom the other metals with which they are usually associated. Before proceeding to operate, and in order to ascertain the proper proportion of salt to be used, the patentee takes 8 oz. samples of the tin ore, previously stamped and washed, and submits them in mixture with different proportions of salt, (say 1 or 2 ozs.) to a temperature of about 163° of Daniell's pyrometer, for about three quarters of an hour, using a reverberatory or other furnace. If, on analyzing the oxides thus produced, either sample is found to be pure, then the quantity of salt used in calcining that sample is a proper proportion to be used. The ores, previously stamped and washed, and salt are mixed together and placed in a reverberatory or other furnace, where they are subjected from three to four hours to a heat of 163° of Daniell's pyrometer, which should be raised gradually but not exceeded, the object being not to decompose the oxide of tin, but to cause the chlorine of the salt to combine with the other metals present, so as to render them soluble in water. At the conclusion of the roasting, the ore is thrown into water and washed, after which it is smelted in the usual way.

CLAIM.—The mode described of applying common salt for purifying tin ores, and separating ores of tin from other minerals.

SULPHATE OF AMMONIA.—Wm. Hunt, of Stoke Prior, patentee.—The object of this invention is to obtain the sulphate of ammonia from the ammoniacal liquor of gas works.—This is effected by making the said liquor to traverse a condenser filled with pebbles and coke, and there brought in contact with sulphurous acid gas obtained by calcining pyrites of any description to drive off the sulphur therefrom. The sulphurous gas may be introduced at the top of the condenser and descend with the falling liquid, or it may be introduced at the bottom; the gas, however, must be cool before it is brought in contact with the ammoniacal liquor. The result of the union of the gas with the liquor, is to convert it into a sulphite, by subsequent evaporation and exposure to the air, the sulphate will be produced. This invention should arrest the attention of our gas companies.

Patent Cases.

U. S. Circuit Court, New York, Judge Nelson presiding.—Blakes Fire-Proof Paint, Wm. Blake, versus J. G. Belknap. This was a suit to recover damags for an alleged infringement of a patent for Blakes Fire-Paint. This case was decided on May the 4th. Verdict for plaintiff six cents, thus sustaining the patent.

Piano Forte Legs.—Warren Hale, versus A. E. Brooks. This was an action for an infringement of a patent for making piano forte legs or irregular surfaces. On May the 5th a verdict was given for plaintiff of $1,000.

A submarine telegraph, from the port of Genoa across the Mediterranean, via the Islands of Corsica and Sardinia, will be speedily executed, and the British Government has issued orders for a branch from Cape Bon, on the African coast to Malta.

TO CORRESPONDENTS.

J. V. H., of Va.—It is really difficult for us to point out what is proper to claim that could be firmly established and retained. The process is patentable—that is wherein it differs from the old ways; this must be all clearly pointed out, explained, and claimed in the specification; other specimens are required. The government fee is $30.

S. S, of N. Y.—We will be happy to see you when you come down with your model, and will be able to form a more correct opinion respecting its qualities.

D. S, of Leon—The Sci. Am will be forwarded to your address for the term of your subscription; subsequent subscriptions must invariably be paid in advance; back numbers sent as per request.

P. & S, of Pa—A gentle breeze exercises a pressure of about 0·83 of an ounce per square foot; a high wind 1 1-2 lbs; you can calculate from this what work you want done, and what amount of sail surface to use; it would require no small amount of writing to furnish you with all the data for constructing wind-mills. We do not advise any person to erect a wind-mill where fuel is cheap; get a steam engine.

P. M. H, of D. C.—You mistake the nature of radiation entirely; it is merely an effort of chemical forces to restore equilibrium, and the common thermometer contradicts instead of confirming your theory; the difficulties of using heat over and over again cannot be mechanical, if your theory is true; we cannot divine how you can entertain such an unscientific idea.

E. H., of Iowa—In Vol. 3 of the Sci. Am. we published a hand-carriage for common roads; it has never come into use. Your modification embraces nothing patentable, and we advise you not to spend time and money upon it.

F. S., of Mass.—An electro-magnetic passenger index was invented by C. Fawnal, of England, some four years ago, and was at that time described in the London papers as a very beautiful invention, since that time we have heard nothing about it.

N. C, of Ohio—We do not understand the meaning of the last part of your letter.

J. W, of Md.—If your second tier of springs is above your city, the difficulty can be remedied by bringing your reservoir to that level where the lower springs can enter it. We see no other way to remedy the difficulty. When you can get water from a hill don't dig an Artesian well.

J. Y., of Mo.—Your plan is correct, excepting the string pieces, they should not be very thin. It is well understood that the embankment, if of sand, is the best; it would not answer to have plank roads in our city; the travel is too much for wood. For villages we think they are excellent.

M. B. & Co., of Ohio—To obtain the information you want, copies of the specifications of the two stoves will have to be obtained from the Patent Office (and you will have to pay for them), as it is impossible to tell the patented points otherwise.

J. S., of Ky.—It is utterly impossible for us to give the attention to your last letter, which you have requested.

J. S., of N. H.—Spratt has a patent; his conductor is a very good one. Any person can make a good conductor with a piece of dry, well varnished wood. We do not know about Homer's. The best conductor is a copper rod, the thicker the better; if this is too expensive, get an iron rod, smooth, and of uniform thickness throughout. F. P. is here often. The M. M. P. is still in existence, and may yet do something.

J. B. W., of N. J.—A B. Wilson, the inventor of the celebrated "Wilson Sewing Machine," resides at Watertown, Ct.

O. H. P. P., of Phila—Your article on Water Wheels is too long; we do not wish to open our columns to a controversy upon the subject, we have had one already; a statement of facts was all that was required; Mr. C. is well acquainted with the P. wheel and claims.

W. B. C., of Ill.—Scrapers suspended on an axis are old and well known; we see nothing new or patentable in yours.

J. B., of Pa.—You would see in a late number of our paper that the Atmospheric Telegraph is not new with you.

R. A. S., of Mass.—We do not see what advantage your suggestion would be to Capt. Ericsson, about using a jet of steam with hot air; we consider the advantage would be to use all steam and no hot air.

Money received on account of Patent Office business for the week ending Saturday, May 7:—

J. S. U, of N. Y., $30; J. A., of Ohio, $30; W. H., Jr., of Ohio, $55; S. C., of N. Y., $30; J. H., of N. H., $40; J. M., of Del, $30; G. D., of Ohio, $3; R. R. F., Jr, N. Y., $50

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday May 7:—

C. & S., of N. Y. (5 cases); F. D., of Va; J. M., of Del.; G. W. F., of Ohio; J. W. H., of R. I; M. S. B., of N. Y.; R. R. F., Jr., of N. Y.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement—Of Volumes 1, 2 3 and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1.75. Of Volume 6, all; price in sheets, $2; bound, $2.75. Of Vol. 7 all; price in sheets, $2; bound, $2,75. Of Vol. 8, all the back numbers subsequent to No. 27, but none previous.

ADVERTISEMENTS.

PATENT HYDRANTS AND COCKS—Bartholomew's Patent Self-acting Double and Single Hydrants and Cocks are in extensive use and much approved of, are strong, durable, not likely to get out of order, always shut when not in use, not like ly to freeze, avoid waste of water, do not burst pipe. The hydrants are cheaply repaired without digging up; double hydrants supply two lots and sixty tenants. The cocks are adapted for water closets, require no care in using; always shut, being self-stopping, give a good supply; the double valve cock avoids the expense and space of cistern, and gives a uniform supply each time used. One service pipe will supply twenty, do not freeze nor overflow, and make the cheapest and best job. Plumbers only supplied at the factory, 84 Marion st, N. Y. City. All work warranted. 35 4*

NEW WORKS ON CIVIL ENGINEERING—The Field Practice of Laying out Circular Curves for Railroads: by John C. Trautwine, C. E.; second edition, in pocket-book form. A New and Rapid Method of Calculating the Cubic Contents of Excavations and embankments, by the aid of Diagrams: by John C. Trautwine, C. E., with 10 copper-plates. Price $1 each; postage on the Curves, 3 cents, and on the Excavations and Embankments, six cents. For sale by Wm. HAMILTON, Hall of the Franklin Institute, Phila. 35 3m

WOODWORTH'S PLANING MACHINES ON hand and manufactured to order, of superior quality at reduced prices, warranted perfect; also steam engines and other machinery. Also Rotary Stave Dressing Machines, capable of dressing staves with the natural growth of the timber, the only one ever invented capable of accomplishing that purpose. Rights for sale in various States. JOHN H. LESTER, 57 Pearl st, Brooklyn, L. I. 35 10*

MACHINE FOR MAKING RAILROAD Chairs—Having built one of my patent machines for making Railroad Chairs, and operated it in presence of several scientific mechanics, who pronounce it the most perfect machine ever made for the purpose, I am anxious to sell rights upon reasonable terms; 4000 perfect chairs can be made in one day, with only one-third the usual labor. ROBERT GRIFFITHS, Newport, Ky., opposite Cincinnati. 35 3*

STAVE AND BARREL MACHINERY—We manufacture Stave and Barrel Machinery, for making everything in the cooper line, from the smallest white lead keg up to the largest cask in general use, and of which are warranted to hold the most subtile liquids. Applicants can see the machinery in operation by calling on us at our shop in Elmira, five minutes' walk north of the New York and Erie Railroad Depot, or by applying to us by mail can get all the requisite information respecting machinery and rights. Sample of the work can be seen by calling at the office of this paper. WM. TRAPP & CO., 34 4* Patentees and Proprietors.

ATMOSPHERIC TELEGRAPH—The English patent (just issued) is now offered for sale at the Company's office, 24 Merchant's Exchange, Boston, Mass. J. S. RICHARDSON, 25tf Agent A. T. Company.

TO IRON FOUNDERS AND MACHINISTS—Great sale of Machinery, Patterns, Cranes, and Foundry Fixtures.—The subscribers being desirous of disposing of the machinery department of their business, will offer for sale, at Public Auction, on Wednesday, May 18, at 10 o'clock, A. M., at their Foundry, No. 110 Beaver street, Albany, N. Y., their entire stock of fixtures, necessary for carrying on extensively the steam engine and general machinery business; among which is the largest and best collection of gearing, pulley, and promiscuous patterns that can be found in the country. A large variety of iron lathes, planers, boiler tools, &c., pertaining to machine and smith shops. Several large cranes, ladles and other foundry tools. Planing machines, saws, and lathes for wood-work, and a large variety of miscellaneous articles. The machinery and patterns have been mostly made under the direction of those celebrated mechanics, Wm. V. Many and Ira Jagger, and are all in perfect order. It is seldom that such a collection of patterns and machinery is offered for sale, and it presents an excellent opportunity for parties who are about commencing the machinery business or enlarging that which is already established. Catalogues will be ready on the 16th inst. The sale will be positive and without reserve. TREADWELL & PERRY, 34 3 late Jagger, Treadwell & Perry.

TO STOVE MANUFACTURERS—The subscriber would call the attention of stove manufacturers to a new process of obtaining slot for covers for the reception of lifting handles, for which he has just obtained a patent; some of the qualities for which he claims an advantage over the old process of chills, wires, &c, is the preventive of cracking, saving the expense of wire, and on moulding, giving a neater and prettier cover; it is now in use in Southern and New York State Furnaces, and gives universal satisfaction, furnace, county or State rights sold on reasonable terms. All letters addressed to me at Albany, N. Y., will receive prompt attention. THADEUS A. SMITH. 34 4*

JAMES D. JOHNSON, Bridgeport, Ct., Proprietor of Wood's Patent Shingle Machine. Persons wishing to purchase rights or machines, can address as above. This is unquestionably the best machine in use for cutting shingles. 33tf

WHEELER, WILSON, & Co.—Watertown, Ct., proprietors and manufacturers of Allen B. Wilson's Patent Stitching Machine. Patented June 15, 1852, it can be seen at the Company's Office 265 Broadway, New York. 30 20*

PIG IRON—American and Scotch, of favorite brands; also Cupola Fire Bricks, Fire Clay, Sand and Foundry Facings of every approved description, for sale by G.O ROBERTSON, & CO., office 135 Water street, (corner of Pine), N. Y. 31 6eow*

PALMER'S PATENT LEG—Manufactured by Palmer & Co., at 5 Burt's Block, Springfield, Mass., for New England and New York State, and 376 Chestnut street, Philadelphia; in every instance of competition in the Fairs of the various Institutes of this country, has received the highest awards as "the best" in mechanism, usefulness, and economy. At the "World's Fair," London, 1851, in competition with thirty other varieties of artificial legs (by the best artists in London and Paris), it received the Prize Medal as the best. 25 20* (16e3w)

PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

BEARDSLEE'S PATENT PLANING Tongueing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany. 15tf

PORTABLE FORGES—REMOVAL.—The subscriber (successor to E. Flagler), and sole manufacturer of Queen's Patent Portable Forge and Bellows, respectfully gives notice that he will remove his depot for the sale of said Forges to 210 Water street (directly opposite to present location), on the first of May next, where, by the long attested superiority of this Portable Forge over all others for the use of blacksmiths, machinists, jewellers, dentists, braziers, shipping, quarries, public works, &c. &c. he hopes to retain a continuation of the past patronage. FREDERICK P. FLAGLER, 32 4* 211 Water st until May 1st.

BARLOW'S UNSURPASSED Planing Tongueing and Grooving Machines. Testimonials of the highest character can be given of their superiority over all others in use. For rights or other in formation. Apply to A. K. Wellington, 184 Twelfth street, New York City. 32tf

THE AMERICAN ENGINEER, DRAUGHTSman, and Machinist's Assistant, designed for practical workingmen, apprentices, and those intended for the engineering profession, illustrated with 200 wood cuts, and 14 large engraved lithographic plates of recently constructed American machinery and engine work, by Oliver Byrne, 1 Vol., large 4 to. Embracing Mathematical and Drawing Instruments, Geometrical Problems, Brackets and Pillow Blocks, Lubricators, Electric Steam Gauge, Horse Power, Parallel Motions, Indicator, Safety Valves, High Pressure Steam Engines, Steamship Engines and Boilers, Rotary Engines, Locomotives, Screw Propellers, Ericsson's Caloric Engine, &c, &c, price $5. The work will be sent to any part of the United States, free of postage, upon the receipt of the amount by mail, address C. A. BROWNE, & CO, publishers, N. W. Corner, of 4th and Arch streets, Philadelphia. 31 6*

STAVE MACHINERY—We manufacture the improved Mowry Stave Machine for slack work, cutting, dressing, and jointing, at one operation, without any handling of the stave until it is finished, after you place the bolt of wood upon the feeding carriage. The machine feeds itself, cutting, dressing, and jointing in a finished and uniform manner 80 to 100 staves a minute. Any kind of timber fit for a stave may be used, even such as could not be rived, as elm, hickory, beach, &c. The cost of running the machine, sawing, cutting, dressing, jointing, removing, and piling up, where a machine is kept steadily at work. For machinery and rights in the State of New York, apply to CHAS. MOWRY, Auburn, N. Y.; for machinery and rights elsewhere, to the subscribers, GWYNNES & SHEFFIELD, Urbana, Ohio. 30tf

WOODBURY'S PATENT PLANING Machines—I have recently improved the manufacture of my Patent Planing Machines, making them strong and easy to operate, and am now ready to sell my 24 inch Surfacing Machines for $700, and 14 inch Surfacing Machines for $650 each. I will warrant, by a special contract, that ONE of my aforesaid machines will planeas many boards or plank as two of the Woodworth machines in the same time, and do it better and with less power. I also manufacture a superior Tonguing and Grooving Machine for $350, which can be either attached to the Planing Machine, or worked separately. JOSEPH P. WOODBURY, Patentee, Border st, East Boston, Mass. 29tf

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc. CHARLES W. COPELAND, 29 13* Consulting Engineer, 64 Broadway.

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongue ing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass., 27 10* N. G. NORCROSS.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO. At this Office.

NEW METHOD FOR MAKING WROUGHT-IRON—The proprietors of Alexander Dickerson's and James Renton's Patents for the manufacturing of wrought-iron direct from the ore, are desirous of introducing the invention into general use; and invite parties who may wish to negotiate for rights for States and counties, or for furnaces, to make immediate application, and to examine the furnace which is in successful operation at the American Iron Company's Works, Newark, N. J. The invention is exciting considerable interest; gentlemen from all parts of the country, who are engaged in the manufacture of iron, have examined the furnace in its workings, and give it their decided commendation. A circular, giving more minute information, will be sent to those desiring it. The rights for several States and counties have already been disposed of. Applications for rights in the State of New Jersey may address the Hon. J. M. Quinby, President of the American Iron Company. Inquiries or applications for other States may be made to A. H. BROWN, Newark, N. J, Office 107 Market st. 34tf

T. J. SLOAN'S PATENT HYDROSTAT—For the Prevention of Steam Boiler Explosions. The undersigned having made extensive arrangements for the manufacture of these machines, are now prepared to receive orders for the immediate application of the same to boilers of every description. They have endeavored to place the instrument within the reach of all, by selling it at a very low price, the cost of one horse-power being only $20, five horse-power, $30, and so on, according to the capacity of the boiler. SLOAN & LEGGETT, Proprietors and Manufacturers, foot of East 25th st, New York. 30tf

W. P. N. FITZGERALD, Counsellor at Law has recently resigned the office of principal Examiner of Patents, which he has held for many years, and is ready to assist, professionally, in the preparation [illegible] patent causes before the U. S. Courts [illegible] States, and before the Supreme Court [illegible] States. He also acts as Counsel in cases [illegible] Patent Office, and on appeals therefrom [illegible] prepare applications for Patents [illegible] 8th sts., Washington, D. C. 18 tf

MACHINERY [illegible], No. 12 Platt-st. N. Y. dealer in Steam [illegible], Boilers, Iron Planers, Lathes, Universal C[illegible], Drills; Kase's, Von Schmidt's and other Pumps, Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Mortising and Tenoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c Letters to be noticed must be post-paid. 27tf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. 27tf P. A. LEONARD

PAINTS [illegible] Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish. QUARTERMAN & SON, 114 John st., 27tf Painters and Chemists

BOSTON BELTING COMPANY—No. 37 Milk street, Boston, Manufacturers of Machine Belting, Steam Packing, Engine and Conducting Hose, and all other articles of Vulcanized India Rubber, used for mechanical and manufacturing purposes. 28tf

COTTON MACHINERY—Of the most approved plans, from the best shops in the country:—drawings, specifications, and general arrangements for the machinery, furnished at the lowest rates, by W. B. LEONARD, and E. W. SMITH, 75 Merchants' Exchange, New York. 23tf

THE TROY IRON BRIDGE CO. are prepared to erect Iron Bridges or Roofs, or any kind of bearing trusses, girders, or beams, to span one thousand feet or under, of any required strength, in any part of the country. Their bridges will be subjected to severe tests, and can be built for about the price of good wooden ones. Address BLANCHARD & FELLOWS, Troy, N. Y. 30 10*

FALES & GRAY (Successors to TRACY & FALES), RAILROAD CAR MANUFACTURERS—Grove Works, Hartford, Connecticut. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly 1tf

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines. For machines or territorial rights, apply to C B. HUTCHINSON & CO., Syracuse, N. Y. 9tf

J. D. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S. Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Screw Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE, 27tf Windsor Locks, Conn.

COCHRAN'S CRUSHING MACHINE—Can be seen in daily operation in Thirteenth street, between 9th and 10th avenues. Parties in want of a machine for crushing and pulverizing quickly and cheaply Quartz Rock, Iron, Lead, Copper, and Silver Ores, and other mineral substances equally hard, are invited to witness the operation of these powerful and simple, but yet effective machines. For further particulars apply to E. & J. BUSSING & CO., No. 32 Cliff st., Y. N. 23tf

THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N H. M. Co., 12 Platt st, N. Y. 28tf

LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati, O. 27 6m*

SCIENTIFIC MUSEUM.

Testing of Lubricators in the Crystal Palace.

GENTLEMEN.—I propose, in the prosecution of my duties as Director of Machinery in the Crystal Palace, to test the qualities of different oils offered by manufacturers for lubricating machinery. To this end I propose to receive, say five gallons, from each manufacturer or seller of such oils or lubricators, who is willing to submit the same to trial under the following rules:—

A suitable person shall receive such oils or lubricators, and deposit them in cans containing 2½ gallons each—the one a duplicate of the other, and both bearing the same number—making five gallons of one kind from one manufacturer. If one person sends more than one kind, it must be understood that there shall be two cans of 2½ gallons of each sample. The person in charge of the oils will record the numbers of the cans, and the names of the depositors. I will see that the same numbers as those on the cans, are marked on the hangers of 800 feet of shafting, and that the same boxes will be oiled with the same oil for four months, employing no more than what is suitable for the perfect lubrication of each joint. At the end [illegible] months, the oils left in different [illegible] be measured, and the bearings [illegible] examined, to see their state, also [illegible] quality of the waste oil in the dripping [illegible] I will be assisted by competent persons, either as judges in the Exhibition, or selected on account of skill and experience in such matters, and will report all the facts connected with this testing of lubricators. On the closing, when the report is made, the *record* kept by the person who received the oils and kept the names of the contributors secret, shall make known the same, so that the public can judge of the merits of different lubricating materials employed for machinery according to the price at which they are sold. The greatest care will be exercised to have the test a most perfect one.

JOSEPH E. HOLMES.

New York, May 7th, 1853.

[Those who sell lubricating [illegible] who are not afraid of testing them with others, will have a good opportunity of so doing.—[ED.

Important Invention or Discovery.

At a late sitting of the Austrian Academy of Sciences at Vienna, Herr Von Amer read a paper upon a newly discovered process of printing from all sorts of objects with comparatively plain surfaces. Among the articles mentioned, which have been copied by the new process, are plants, some of them in flower, embroidery, etched agate, insects, fish-scales, &c. The speaker calls this "Natursolbetdruck"—printing from Nature—and said that this discovery forms a new era in the pictorial illustration of works on science and art. The objects copied were given with singular fidelity to the originals. No hint was given as to the process.

Guano and Phosphate of Lime.

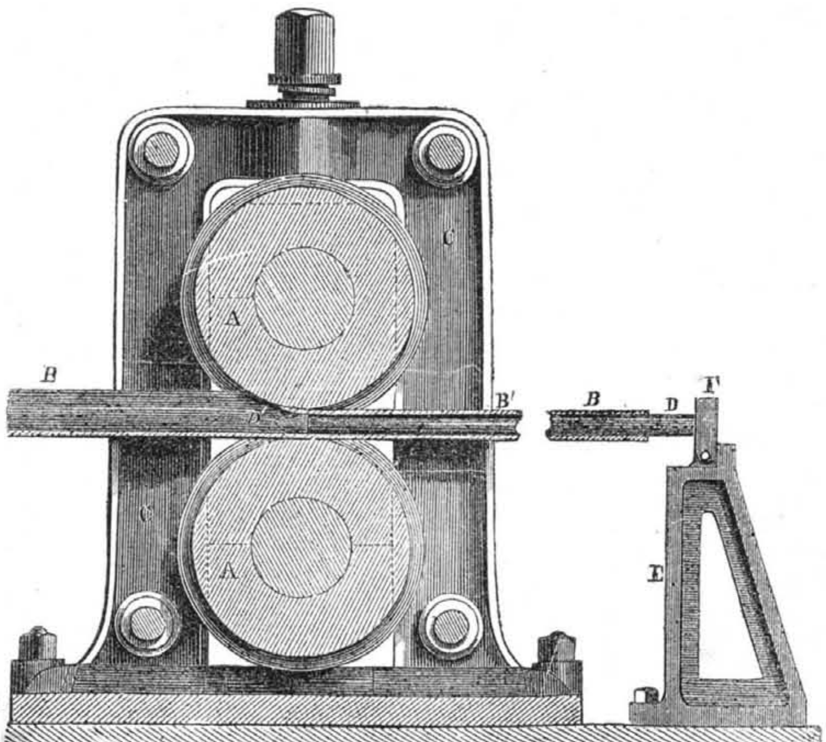
At the present moment guano is exceedingly scarce in New York, in fact it cannot be obtained, we are informed, in large quantities at all. An article of manure called "Improved Super-phosphate of Lime"—artificial manure—manufactured by Prof. Mapes, sold for $50 per ton, is asserted by some to be equal if not superior to guano; it has been analyzed by Prof. Johnson, of Yale College, who sets forth its true character. According to these analyses, 100 pounds of "Mapes's improved superphosphate of lime" is composed of sulphate of lime (plaster) 37 pounds; insoluble phosphate, 21 pounds; soluble superphosphate of lime, 15 pounds; free sulphuric acid, 5 pounds; ammonia, 2½ pounds. The non-nitrogenous organic matter, water, and sand, which compose the other 20 pounds, are of course of but little value. It is, therefore, far less valuable than Peruvian Guano.

According to the chart of Lake Erie, it is ascertained that the lake is divided into three sections. One of these extends from the head down to Pt. Pelle island, and the bottom presents a general level, with a depth of 30 feet in the average. The second is of much larger extent, and stretches to Long Point, is also a level, with a depth of 60 to 70 feet. The third section extends to the Niagara river, and is an uneven bottom, with various depths of water, ranging from 60 to 204 feet. The Atlantic steamer lies but a short distance from the greatest depth of water.

An ingenious Yankee has constructed an india rubber stove. It is a great improvement upon cast iron, inasmuch as if some sticks of wood are too long, they can be crowded in, the material being sufficiently elastic for the purpose. The india rubber stove, too, is not liable to be cracked with the heat.—[Ex.

[What a consciencce the author of the above has, in attributing the elastic stove to a Yankee, who usually prefers granite to gammon.

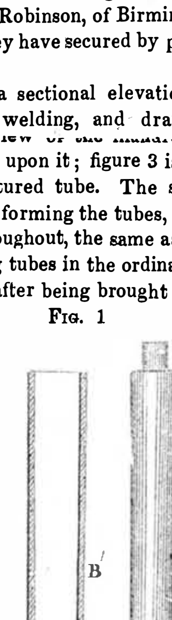
WELDING CONICAL IRON TUBES---Fig. 1.



The annexed engravings are views of an improvement for welding iron tubes, by J. Clark and C. Robinson, of Birmingham, Eng., and which they have secured by patent in that country.

Figure 1 is a sectional elevation of rollers for forming, welding, and drawing tubes; figure 2 is a view [illegible] with the bulb upon it; figure 3 is the section of a manufactured tube. The skelps, B, of iron plate, for forming the tubes, are of equal thickness throughout, the same as are used in manufacturing tubes in the ordinary manner; these skelps, after being brought to a welding

FIG. 1



heat, are submitted to a pair of rollers, A A, of the usual construction, set in suitable frames, C. These rollers at once, while the skelp is at a welding heat, turn over the sides of the skelps, and bring the edges in contact, and then weld them. This operation is effected upon the bulb, D', of the mandrel, D, over which the newly-formed tube, B', is drawn towards the other end of the mandrel, the length of the skelp being dependent upon the length of the tube to be manufactured.—The tube thus formed is, however, notwithstanding the taper form of the mandrel, cylindrical in shape and equal in substance throughout, the interior diameter being equal to the diameter of the bulb, which will be about equal to the greatest diameter of the mandrel. The outer end of the mandrel, D, is supported and held by the standard, E, abutting against the stop, thereon, thereby maintaining the bulb, D', at the other end of the mandrel, in its proper position between the rollers, A A. When the whole of the skelp is passed through the rollers and the tube passed over the mandrel, the stop, F, is lowered, and the tube (with the mandrel within it, but the bulb at the end removed) passed on to another pair of rollers, similar to the last, between which the tube is drawn. These rollers have somewhat smaller grooves upon their peripheries, and thereby reduce the thickness of the tube at the end where the thickest end of the mandrel is situated, and roll the superabundant metal therefrom towards the other end, where the metal thickens, thus forming the tube of cylindrical exterior, but gradually taper within, conforming to the shape of the mandrel. Should the tube now be found to be sufficiently formed, both exteriorly and interiorly, and of the proper thickness required, it is passed to the draw-bench, for the purpose of extracting the mandrel; but should it not be considered properly finished and smooth, it may be again passed through another similar pair of rollers for further reducing it and completing it.—The draw-bench employed is of the usual construction; and should there be any difficulty in removing the mandrel from the tube, re-heat the tube, and then submit it to the action of the draw-bench, or by means of cold rolling the tube between three rollers, as is well known, and thereby loosening it upon the mandrel. The object of making the tubes conical for steam boilers is to make them stand the unequal tear and wear of fire exposure. The ends of them nearest the fire being subjected to greater heat, and, consequently, wearing away faster than the ends more remote therefrom, in the case of the use of tubes of the usual construction, namely, when they are cylindrical and parallel from end to end, and the tubes of equal thickness throughout, the result is, that when the end nearest the fire is worn out and rendered unfit, the other end will still be in good condition, and might, if dependent on itself, be still used without removal; but it will, in consequence of the worn-out condition of the one end, be necessary to remove the whole tube; it is intended by the present invention to remove this inconvenience and disadvantage, by the employment of tubes so made and constructed that the part of the tube most subjected to the wear and tear shall be in better condition to resist it, and cause the tube throughout its whole length to be so affected by the wear and tear as to be worn out or rendered unfit for further service, equally. This the patententees effect by increasing the thickness of the substance of the tubes at the parts most exposed and subject to the wear and tear, and, at the same time, reducing in thickness the parts less exposed—in fact, forming them of a gradual taper upon their interior, while their exterior still remains cylindrical, and of the same diameter as when constructed as usual; by this mode of construction, the tubes will be worn out or rendered unfit for further use equally. Although this mode of forming the tubes renders them capable of sustaining a greater degree of wear and tear, lasting longer, and consequently being more economical. It is not attended by any increase of weight of the whole of the tube, as the quantity of the metal necessary to increase the thickness of the one part of the tube will be obtained from the other part, by the reduction of the thickness there.

A hundred mill girls, selected by an American speculator in Glasgow, have sailed from the Clyde, to commence a new cotton mill at New York. The party sailed in the Mary Morris from Greenock. News here.

LITERARY NOTICES.

BOOK OF THE WORLD—No. 7; Weik & Wieck, 195 Chesnut st, Philadelphia, is an encyclopedia of choice literature and knowledge, it contains many thrilling and instructive historic tales, with sketches of philosophy and natural history of the most interesting and useful character.

ORNAMENTAL DRAWING, FOR PAINTERS, SCULPTORS, CARVERS, ARCHITECTS, &c., by Sullien, Bilordeaux, Rotterman, Metzger, and others, published at the same place as the above, is one of the most beautiful publications we have lately met with, the designs are chaste and elegant, as well as bold and ornamental; the work is executed in a very superior style, and deserves an extensive patronage. No. 3, 4, and 5 are received.

Putnam's Monthly for May, No. 5, continues as entertaining as ever, it opens with a posthumous publication from the pen of Cooper, the novelist, being the naval biography of the frigate Constitution, familiarly known as "Old Ironsides" This vessel was one of the six ships that formed the early marine of our country, and was commanded at different times by some of our most celebrated sea captains. A perusal of this last writing of such a celebrated man as J. Fennimore Cooper, is interesting for many reasons. The other articles are all well written. Success to Putnam's Monthly