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Rail-Road News.

Pacific and Mississippi Railroad. Professor Forrest Shepherd, in a letter to the New Haven Palladium says :-

"In relation to the projected railroad from the Mississippi River to the Pacific, that the road can be constructed from the Pacific to the Mississippi, without crossing any mountains, or encountering so much snow as between Boston' and Albany. He says this route is from the head or southern portion of Pularo Valley, through Walker's Pass, thence to the Mejaree River, thence north-eastward to high grounds on the tributaries of the Rio Colorado, thence crossing the said river above the great Carion, thence east to Pilot Mountain near Sante Fe, passing Pilot Mountain on the north side, thence to Santa Fe and the Mississippi at Apple Creek below St. Louis, where there is a good landing and open navigation to New Orleans through the winter, and of course a road on the bank of the Mississippi to St. Louis. The route will be 600 or 800 miles nearer than any other, has wood and water nearly the whole distance, and abundance of stone and coal at Santa Fe. The above route will accommodate both North and South, New Mexico and California. and ocean steamers will soon render a trip from San Francisco and Astoria as light a matter as at present from Buffalo to Chicago or Mackinaw. The route further north is very objectionable on account of the snow ever on the table lands on the head waters of Feather River. I have travelled over snow apparently undrifted, varyfrom 12 to 20 feet in depth, in the month of June. Fine specimens of native silver, reported, too, to be abundant, have been brought to me from the line of the Southern route."

"I have now explored California for nearly nage vulgar fractions. gives the quantity of gold. Next pour hydrois set on 1449, (circle a), its logarithm= two years, and I can truly say it is a land of EXTRACTING ROOTS.—Rule 4. $n\sqrt{m=x}$. chloric acid into the solution to throw down 3.16106 (circle b). The arm shows an angle wonders. There are fresh flowers every month Divide the logarithm (circle b) for the number, the silver, wash the precipitate, dry and weigh $=8^{\circ} 20'$ (circle c), which sines=0.1449 (cirin the year, and Winter now wears the bloom m, by the index of the root, n: that is to say, it; 100 parts of chloride of silver are equivacle a). The complement angle= $81^{\circ} 40'$ (cirof Spring. I have found water falls three the index for the logarithm is kept with the lent to 75.5 of silver. If the proportion of silcle d), which cosines=0.1449 (circle a). and four times as high as Niagara, natural small hand on the screw, C, and the mantissa in the alloy be very small, the nitric acid will The calculation with this instrument is ba bridges of white marble, far surpassing in beauon circle b, and the number m on circle a—the only effect its partial solution; in that case sed upon the principle of logarithms, though ty that of Rockbridge in Virginia. Some quotient (circle b) is the logarithm for x, (cir- add as much silver to the allow by fusion as will the logarithm in general cases need not be obthousands of gold bearing veins, inexhaustible cle a). [The mantissa is the decimal part of make it at least equal to three-fourths of the erved, but when the number of figures in the quantities of iron and chrome ores, lead. a logarithm.] mass. Account must be taken of the quanti result is uncertain a correct account must be **TRIGONOMETRY.**—Rule 5. Sin. C= $\frac{c \text{ sin. } A}{c - c - c - c}$ bismuth and quicksilver, most beautiful porty of silver thus added at the end of the operakept of the index of the factors; for that purcelain clay, and in short almost everything tion. Set the arm A on the number c, and the arm pose there is a small hand on the top of the that can bless an industrious and enterprising screw, C, which is to be moved by hand for B on the number a; fasten the screw, C; To Analyse an Alloy of Silver and Copper. people. In one valley I found more than foreach operation with the arms. Also any powmove the arms until the arm B comes to the Dissolve the alloy in nitric acid, and dilute ty springs of a temperature over 100° Fahrenangle A (circle c); the arm A shows the angle the solution with water, throw down the hyer or roots of numbers can be easily extracted. heit. In another valley sixteen geysers, like The most difficult or simple calculation may the famous one in Iceland. In this famous C (circle c). These operations are done in a drochloric acid, and filter the liquor, washing be computed, from the simple addition and few seconds, without having recourse to tathe precipitate till ammonia ceases to produce abode of Vulcan the rocks are so hot that a blue color; then mix the washings with the subtraction of numbers to the most complicables of the trigonometrical lines or logarithms ; you can stand upon them but a short time, the answer gives not only the sine C, but also | filtered liquor, reduce it by evaporation, and ted business accounts, and the higher branches even with thick boots on. The silicious rocks of mathematical trigonometrical equations, the angle C itself, expressed in degrees, miadd an excess of hydrate of potassa or soda to are bleached to snowy whitness, and brecciaseparate the deutoxyde of copper, from which are alike easily calculated. nutes, and seconds, and in the operation sine ted and conglomerate rocks are now actually A need not be observed, merely use the angle the quantity of copper in the alloy is ascertain. At the end of each arm is a screw, e, to fasorming. The roar of geysers at times may be heard a mile or more, and the moment is one ten the arms in any particular point of the of intense interest as you approach them. A. Any of the trigonometrical lines will be ed, as that of the silver is learnt from the chlofound on the machine-for instance, the area ide. of intense interest as you approach them.

This machine is the invention of Mr. J. W. Nystrom, of Philadelphia, and was patented Set the arm, A, on the factor 16 (circle a) and in March last. The inventor is a learned and very ingenious engineer, and this machine is the screw, C; move them until the arm B the most important one ever brought before the public. We cannot even give all the examples of its powers we would like, for want of room, rather because of the extent of its operations, but after a description we will present a few.

The Calculating Machine represented in the accompanying engraving, consists of a round disc of metal or other suitable material, B on the divisor, 15; fasten the arms with mounted upon three feet, DD; it has two graduated arms, A and B, on which are marked a b c d, representing the four different figure circles on the disc. In the centre of the disc is a screw, C, to clamp the two arms, A and B, together; when clamped they can be momoved freely around the disc. The circle a (marked on the arms) contains the numbers for Multiplication and Division; the circle bcontains the numbers for Addition and Subtraction, and also the Logarithms for the numbers in circle a. The circles c and d are for Trigonometrical calculations, of which the numbers in circle c are an angle-the numbers in circle a showing the length of its sines; the numbers in circle d are the complement angles for circle c, and circle a its cosines.

The large figures in the circle a represent the first figure of a question, the small figures the second : the third figure will be found on the arms, and the fourth between the figures on the arms.

MULTIPLICATION.-Rule 1.-16×12=192. the arm, B, on 1; fasten the two arms with comes to the next factor, 12, the arm, A, shows the product=192. If more than two factors are to be multiplied together, consider the product of two factors as a new factor, and continue the multiplication by the next factor, as aforesaid.

DIVISION.-Rule 2. 365:15=24.33. Sea the arm A on the dividend, 365, and the arm the screw, C; move them until the arm B comes to 1; the arm A shows the quotient= 24 33. If the dividend contains more than one factor, multiply them as in rule 1, the product is the dividend. If, also, the divisor contains more than one factor, consider the quotient of the dividend and the first factor in the divisor as a new dividend, and continue the division by the next factors, as said in rule 2.

PROPORTION.—Rule 3. a: b=c: d. Set the arm, A, on the first term, a, and the arm B on the second term, b, fasten the arms with the screw, C; move them until the arm A comes to the third c, the arm B shows the fourth term, d. If the third term, c, is ununknown, set the arm, B, on the fourth term, d, and the arm, A, will show the third term, c. If the arms be moved to any position on the disc, the numbers within the same will still remain in the same propertion as a:b. This fact makes it convenient to ma-

the value of c and C is given; the operation on the machine is done in a moment.

Example 1.-What is the "pitch" of a propeller 9 feet 3 inches in diameter, the angle of the blades in the circumference being 53° 45' ? Pitch=3.14×9 25× cos. 53° 45' = 21 ft.

sin. 53° 45' 6 in. Set the arm A on 3 14, the arm B on 1 (circle a); fasten the arms with the screw, C; move them until the arm B comes to 9.25; fasten the arm A with the screw e; loosen the screw C, then move the arm B to 53° 45' (circle c); fasten the arms with the screw, C, then loosen the screw e, and move the arms until the arm B comes to 53° 45' (circle d). the arm A shows the pitch=21.49 (circle a).

Example 2.-What is the angle V of the blades in the circumference of a propeller with **a** pitch= $2\frac{1}{2}D$? Cot. V= $\frac{P}{2.5D}=\frac{2.5D}{2.5}$ πD πD 3.14 Set the arm A on 25, the arm B on 314 and fasten the arms with the screw C; move them until the arm B shows the same angle on circle c as the arm A shows on circle d, and it will be found that the angle $V=51^{\circ}$ 30'.

A Calculating Machine for general business use will be about 9 inches in diameter ; those for astronomical and the more particular branches, where a greater number of figures are required, will be about 2 feet in diameter, and the engraving of course will vary. Another, for approximating calculations, intended to be placed in pocket-books, will be about 3 inches in diameter, printed on paper, the arms also being made of paper.

It is intended to publish a book to accompany the machine, containing numerous examples and directions that will enable any person to use the same. This instrument was exhibited at the Annual Exhibition at the Franklin Institute, in 1849-50.

The inventor, not having the time to spare which this instrument deserves to have devoted to it, offers it to any person who will undertake the manufacture of it, or will buy the patent right; especially to any person engaged in the new art of Electrotyping : such persons will find it of great utility, as they can electrotype the disc, and thus save the expense of engraving it and by saving this it will enable the manufacturer to sell it at a greatly reduced rate, and bring it within the reach of every business man. Direct letters to J. W. Nystrom, 31 Union street, Philadelphia.

To Analyse an Alloy of Silver and Gold. Laminate the alloy, and treat it by nitric acid, till nitrous gas ceases to be disengaged; He adds :the residium well washed, and heated red, In the accompanying engraving, the arm, B,

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Miscellaneous.

Foreign Correspondence.

London, April 25th, 1851. "The work goes bravely on" in the departments of the Great Exhibition Building. On the day I penned my last letter, the veteran Duke of Wellington, "the Iron Captain," visited the Exhibition, and after walking through it for some time, he at last arrived at the French department, where he paused to observe one of the exhibitors removing from an oak case various costly articles of gold and silver, and just at that very moment he uncovered a pair of equestrian statuettes of the Duke himself, and his once redoubtable opponent on the field of Waterloo, Napoleon Bonaparte. The old General smiled at the incident, while the sharp-eyed Frenchman looked at the statuettes and then at the Duke with an enquiring look, when the veteran nodded his assent to the resemblance. In a few moments the General was surprised and surrounded by Frenchmen. They politely raised their caps, and with true military salute he passed on to the next department.

The opening of the Exhibition is to take place on the first, as mentioned in my last. It will be a grand affair. The throne is now erecting for the Island Queen near to the centre of the large transept. A platform is to be erected, and the Archbishop of Canterbury, all the officers of State, and foreign ambassadors will attend in full dress. There will be splendid music, and after a number of cere:nonies, the Queen, Prince Albert, the officers of State, and all the Commissioners will form a procession through the "wide expanse" of the building, after which the exhibition will be declared open for the public.

Owing to a profound degree of dissatisfaction on the part of the exhibitors of articles of sculpture and statuary with the proposed arrangement of Sir R. Westmacott, who had been charged with the superintendance of the sculpture room, the greater proportion have been withdrawn by the exhibitors, and places have been obtained for them in the transept and nave of the building. It appears that the plan proposed by Sir Richard Westmacott was to place the whole of the articles of sculpture, without regard to the nature of the subject, upon counters of a uniform height, which was absurd on the face of it. The artists, on the other hand wished to place their productions on pedestals adapted to the size and character of the subjects, which was only just and reasonable. This proposal was not acceded to; and many, if not most, of the articles were accordingly removed. Among the groups and figures which have emerged from what the artists have just termed "the condemned cell," to the liberty of the transept and nave, are-MacDowall's "Satan tempting Eve," ' and "Michael and Satan," "Dr. Jenner," "Jacoband Rachel," and various others. There is now a somewhat numerous collection of ar-

As the art of ship-building is one for which him are finally set at rest. They have been men were required to ring it, but owing to an Parsnips are an excellent vegetable, both for our countrymen are distinguished, and as alexamined carefully by his chief, Mr. Secretary improvement in the hanging, four now suffice. the table and for the feeding of farm stock. leged improvements always attract their at-Stuart, and Mr. Attorney-General Crittenden, We believe our farmers do not pay so much The relics of the Cathedral were, on Good Friwho pronounce them in detail as either unfountention, especially in New York, where so attention to the raising of this root as they day, carried round in solemn procession after much is at stake in ships, I see it mentioned ded or frivolous. should do. We have lately received a sample a sermon of the Abbe de Ravignaa. The Preof the Liverpool papers, reierence sident of the Republic was present, and there of a few from Mr. Wm. Taylor, of Schenectady, provement has been made there by a Mr. Mcappointment of Mr. Ewbank have never been was a vast congregation. N.Y., of the English kind, which are of a Kimm, which is thus described :known. They are simply these as I have very superior flavor, and far better than those ' The object of the projector appears to have them, not from Mr. Ewbank, but from the Copper Boilers. which are common among us. been to form an uninterrupted, unbroken, and highest possible authority. Mr. Secretary Ew-It is stated that copper boilers are hencecontinual line of binding, to extend from one ing saw his work upon Hydraulics, and consi-Improvement in Making Flour. forth to be used on board the steamers of the end of the vessel to the other, and to connect dering it a scientific performance, sent to the au-Whatever adds to or improves the quality Royal Navy, as their greater durability has every frame of timber together, in its passage thor to inquire if he would accept the place of of anything useful to man is of great imporbeen found to render them cheaper in the end along the side of the ship, in such a way as to Commissioner of Patents. Upon understanding tance, and is particularly worthy of attention, than iron boilers, of which the first cost is sender the framework inextensible and incomthat he would, the matter came up in Cabinet, especially when the improvement relates to small. pressible, and to give the greatest amount of and the appointment was made. I do not think such an article as the "staff of life"-flour. stability to the frame-work, independent of that at the time it was known that he was An improvement relating to our improved sys-M. Gaysa, a Hungarian traveller in Africa, any support from the plank-work, and to comborn in England. When opposition was made tem of milling has lately been somewhat prohas discovered the tomb, quadrant, &c., of minently brought under our notice in a pamph- Jaques Compagnon, a French traveller who plete the object without wounding the frame on that account, he found defenders, some of was lost in the interior of Senegarabia, in with bolts, &c. With this object in view he whom it was erroneously supposed aided in let published by the inventor and patentee, has succeeded in accomplishing the desired ef. procuring his appointment. Mr. D. P. Bonnel, of Tecumseh, Michigan. 1760.

fect by the introduction of two arched lines, constructed of iron plate-work, the one arch extending upwards, the other extending downwards as far as the bilge of the vessel; the arches being reversed, one chord line of iron plate-work answers both arched lines, and materially assists in the longitudinal tie, which extends in a vertical longitudinal position from stem to stern-post, forming within themselves the contour of the beam of a steam-engine within the frame of the vessel; one beam being so formed in each side of the vessel and continued round from stem to stern-post, where theyterminate, and are bolted together through the stem and stern-post; the very formation of which tends to counteract the different forces exerted on the body, and opposing every tendency to hogging or sagging, which is more or less common to all vessels, particularly colonial built vessels. The scheme appears well worthy of notice amongst those who are interested in the construction, safety, and durability of such vessels."

EXCELSIOR.

FORELAND, Greene Co., Ala., April 21. MESSES. EDITORS-I intrusted some business in the hands of the "Inventors' National Institute," at Baltimore, Md., in 1849 and 1850. I inclosed to Mr. Jas. Coppuck, Cor. responding Secretary, Inventors' National Institute, Baltimore, Md., a description and rough sketched drawings of an improvement on Water Wheels. I also inclosed \$15 or \$20 as fees, &c., for examining into the novelty of my alleged improvements, the receipt of which was acknowledged; and they informed me that it was their decided opinion that I was entitled to a patent, but it would require some time to examine fully into the matter, to give me all the information I requested, which they would do in a few weeks. More than a year has now passed, and I have heard nothing further from them; I have written several times since, and have not received any answer from them. I am therefore at a loss to know whether the fault is in them or in the mail.

I have come to the conclusion that it is likely the Institute has fallen through, and it is nobody's business to answer my communications directed to the Institute. I will therefore take the liberty of inquiring of you, if you can inform me whether the Inventors' National Institute, at Baltimore, still continues to transact business as Patent Agents. Res-J. H****. pectfully yours,

[The above letter we publish for the purpurpose of making a few remarks in regard to the matter. The letter tells its own story, and there is no doubt our correspondent has been genteelly swindled under the garb of a high-sounding title. We do not know that the Corresponding Secretary is at all chargeable for the evident misappropriation of the funds; the presumption is that he was a salaried officer, but we advise our correspondent to address him a letter of inquiry at Mount Holly, N. J., where, we feel sure, he formerly resided, and we presume Mr. Coppuck will af-

I see it stated in some papers that Mr. Ewbank had been ordered to pay the amount he expended in publishing his official report to the Secretary of the Interior with reference to the case. Mr. Ewbank's accounts for the quarter are now before the accounting officers, and have not yet been acted upon. There is, therefore, as yet, no decision with reference to the validity of the items complained of.

[The official report mentioned here, we have made some enquiries about, and find it to be very different from the idea conveyed in the above. It relates to the publishing of the report in a number of papers in different parts of the country, for which they were ordered to send their bills to the Patent Office. Charges were preferred against him for this, we believe, but we always thought that he did not intend to charge the Patent Fund with it, as it related to his own, business. We there fore concluded that the charges were preferred in a mistake. However, we are not acquainted with private doings in the matter, and do not pretend to "be wise beyond what is written.

Incrustations on Steam Boilers.

The incrustations which form in the interior of steam boilers have given rise to much discussion, and many substances have been recommended for the purpose of obviating a result attended with so much difficulty to the engineer.

Several attempts have been made to deprive water of the saline matter which it holds in solution before it is introduced into the boilers, but these have been without effect, and the main object seems now to be to prevent the incrustations adhering so firmly to the boiler that their removal will not be attended with much trouble.

Coal tar was recommended a year or two ago in the Scientific American, I believe, as being most effective in preventing these incrustations; but little notice seems to have been taken of it, and potatoes, sugar, &c., were recommended and tried, but did not entirely succeed.

In the city of Louisville, where the water is more highly charged with lime than it is in many other places, this inconvenience is severely felt; there, after a trial of various substances, they find the coal tar to succeed better than any other article.

The following is the manner of using it after the boiler has been cleaned, about one pint of the tar is introduced into it, after which it is poured into the heater, and thus reaches the boiler. In Louisville, one pint a week, introduced into the heater, is sufficient long.

During the use of this substance the lime is found in the boilers in large flakes, or if not absolutely loose, is removed by the application of the slightest force.

In one establishment this agent has been used for a period of six months, and in another for more than a year.

Cincinnati, 1851.

Good Parsnips.

This improved process consists in separating the starch from the glutinous substances contained in the grain, and submitting the latter to a second active grinding or acouring process the extension of certain patents. This is not This is effected by placing a set or run of aux. iliary mill stones, (under a very rapid motion, from 300 to 500 revolutions per minute,) so as to intercept the whole body of the offal on its passage from the first or superfine bolts, to the return or duster bolts. The auxiliary mill may be adapted in size to the work to be done; a stone 36 inches in diameter being sufficient for a common 4 run mill. It should be driven with a spur wheel or gearing of some kind, as a belt is liable to slip and lose motion. The eye of the stone should be made very conical, and the irons put in so as to leave as much room in the eye as possible-the whole of which should be covered with smooth sheet iron or tin. The stones should be strongly banded, hung and balanced very nicely, dressed true and smooth, with a pretty large proportion of deep furrows about the eye or centre. The feeding is supplied and made very uniform and perfect, by substituting a large funnel for the common "hopper, shoe and damsel." Around the tube of the funnel is cut a screw which passes through a nut set immediately over the runner's eye. This tube reaches down in the eve of the runner until it comes nearly upon the top of the bale, which should be formed so as to fit, or nearly so, the opening of the tube; then, by turning the funnel. the screw widens or contracts the opening at the top of the bale, admitting more or less feed, as desired.

> In using this improvement, the first grinding should be done with reference to the starch entirely, always being careful to reduce no part of it so fine as to destroy its granular qualities. This done, the bolting is free, and the starch is bolted out in passing through the first or superfine bolts. The remainder of the the stuffs is sent directly to the auxiliary mill, where it is ground to any degree of fineness the miller may desire. It is then passed through the lower merchant or duster bolts, and such portion of it sent back to the same as may be necessary, until all the flour is brought out clear from "speckula," when it is continually sent to the cooler or first bolts, to be uniformly incorporated with the superfine flour.

This method of a second grinding is stated to make better fine flour out of fewer bushels of wheat than by the old processes. This we can believe, much of the real muscle producing food being lost in the bran; it is not the whitest flour that is the best by any means. In the United States we have 8,000,for a double flued boiler twenty-eight feet 000 surplus barrels of flour annually, and this must find a market somewhere. In Europe, we have to compete with Russia and Germany, and it is only by improvements in milling that we can expect to compete with them. This is a subject worthy of the most earnest attention of our millers and farmers.

The Great Bell at Notre Dame.

The large bell of the Cathedral of Notre ford him some information to whom he can ticles of sculpture in the transept. A group in Coal tar is a very economical substances for apply for satisfaction.-[ED. Dame was rung on Good Friday, after a simarble, by Engel, executed for Prince Albert, this purpose, especially in cities where gas is lence of three years, caused by repairs in the attracts considerable notice. The group re-Doings at Washington. manufactured from coal. belfry. A large crowd assembled on the Parpresents an Amazon rescuing her sister-in-MR. EWBANK, &c.-The correspondent of CHARLES W. WRIGHT, M. D. vis to hear it. The bell is called Emmanuel, the Tribune says :arms from an Argonaut who had carried her was cast in 1682, and Louis XIV, named it in captive. As to Mr. Ewbank, the charges against the christening ceremony. Formerly sixteen

Scientific American.

NEW YORK MECHANICS' INSTITUTE.

This Institute has lately removed to the specimens of rare and excellent workmanship | machinery in this city, will find power and large building at the junction of Division street and the Bowerv. as represented in the engraving below. This spacious building, comprising four floors, each containing 3,500 square feet. has been taken on a lease of five years, and it is resolved to devote the whole of this large space, except so much as is required for the Library and Reading Room (which has been tastefully fitted up on a part of the first floor), to the purpose of a Polytechnic Institute like that in London. An opportunity will thus be be made to render the exhibition worthy of this afforded to Mechanics, Inventors, and Artists, | Institute, and of our city and country. at all times, to bring into public notice the products of their ingenuity and skill; and to the public not only to see collected in one place | to the public. Those who desire to exhibit | impartial manner, and by such an intelligent

in the various branches of art, but to inspect room there to do so, at all times. the actual operations of workmen in the more curious, new, and ornamental fabrications. A steam engine will be provided to drive such as require power, and for the proper display of the machinery on exhibition. Familiar lectures will be delivered as frequently as may be, on chemical, mechanical, and other scientific subjects, and illustrative of the objects and operations exhibited, and every effort will

The Exhibition will be permanently open after this week, and we cordially commend it

There is nothing on this continent, except the Annual Fairs held in our large cities, in the least resembling this contemplated exhibition; and they, being held for a few weeks only in each year, cannot afford to the public

or to inventors and artisans, the advantages which will thus be extended to them. But along with the permanent Polytechnic Exhibition, we would sincerely recommend the instituting of a great Annual Exhibition or Fair, by the Institute, to be held about the latter part of August or the early part of September every year. A Fair, conducted in an



many able mechanicians belonging to the Into explaine the many wrongs she has done to exhibitors, who have come here from a distance to other Fairs, and to show to the whole country that we have the clear ringing metal of worth among our celebrated engineering community-many of whom belong to the Mechanics' Institute. In order to avoid the errors into which other Fair-holding institutions have fallen, let us give a few words of advice, as we have paid particular attention to such matters, and have heard (as we always do hear) the complaints of those who have been wronged and dealt with in a partial manner.

1st. The Mechanics' Institute should not supporting a few favored men. as its first object. The payment of the expenses-such as fair salaries for the permanent offices, is necessary, but no more. Many institutions become mere hives of drones, being managed by a few very incompetent men, so far as scientific and mechanical qualifications are concerned.

2nd. The examining corps must be able and impartial men: they must not say to one man "pay for the gold and you will have a gold medal next year; this year we have given

examining corps as can be furnished by the rection ; we like to see it, and as long as it is conducted well we will heartily advocate the stitute, is demanded of the city of New York, good cause. We have occupied, and will always occupy, the position of freedom from partial influences, so as to be independent of all parties and cliques, and thereby untrammelled by any considerations but truth and right. When we see wrong done, it makes no matter what the Institute may be, we will speak out as we always have done. We like the plan of the Mechanics' Institute, it is a good one,-let it be carried out perseveringly and impartially, and great good will result from it. Let our mechanics support it with heart and hand; let them consider their honor at stake in doing so. No city in the world presents so many advantages as this for conducting such an institution. Its officers are not relook to mere money-making for the purpose of | tired generals, nor do such titles afford certificates of promotion to judge of the merits of works of art and engineering. Many of our most able engineers are members of it, and it is to be hoped that all will become so. The Institute occupies four large rooms; on

and Reading Rooms, and there is to be a fountain for hydraulic machines, &c. On the second floor, steam engines, machinery, and working models will be exhibited. On the third is the Lecture Room, where machinery, if necessary, will be exhibited ; the fourth one to your neighbor, because we gave him floor will be devoted to classes in modelling, only a diploma last year, and he has paid for and the exhibition of less finished articles.

More about Severson's Bridge.

Two weeks ago we published an illustrated description of the iron Bridge invented by Mr. Benjamin Severson, of Schenectady, N. Y. As there are some principles mentioned in Haupt's late work on Bridge Building, as new and which attracted Mr. Severson's attention some years ago, and are embraced in his bridge, we publish the following about the quarter braces and refer our readers to the engraving to make a re-examination.

The quarter-braces, made of wire cables of wrought-iron rods, starting from the ends of the upper arcs and connected at different points to the lower parts of the voussoirs, add much to the strength of the structure. At the middle of the length of the truss, the positive and negative forces act horizontally, and at the ends act vertically on the abutments. The amount of vertical pressure at intermediate points, is in proportion to the distance of each point from the ends or middle of the truss; and, regarding these braces as resultants, acting in the direction of their length, an analythe first floor above the stores are the Library | sis of the forces will show that the amount of vertical support given by each brace, will also be in proportion to the amount of vertical support at their several points of connection with the lower part of the truss. And these braces being connected to the end pieces, op posite the ends of the upper rigid arc, and by means of screws made to press firmly against the ends of the arc, the arcs being cambered, avidant that

bend the truss, the forces will act horizontally at the middle of its length and vertically at the ends. That at intermediate points their moment or intensity will be proportional. That at the outer ends of the upper arc or rail, the horizontal forces will be zero-liable however to be moved or thrust outward horizontally in consequence of the increased horizontal pressure at the middle, produced by an increase of load, such as would bend the cambered truss downwards. Now, to prevent this horizontal outward movement at the ends of the upper arc, and the consequent racking of voussiors, he uses the quarter braces, and by having their ends attached against the ends of said arcs, and at different points to the lower part of the truss, the degree of inclination of each brace will ensure an amount of vertical support, in proportion to the amount of vertitical pressure occurring at their several points of connection at their lower ends. Whatever amount of vertical pressure is intercepted by these braces, will be conveyed through their length without further intermingling with the truss, and lodged at their upper ends, directly over the abutments, thence downwards. And at the same time that these braces meet and dispose of the requirements of the unequal vertical pressure, they will equalize the horizontal forces in the upper arcs, changing their ends from zere, to a pressure if not quite equal to that of the middle. And yet the original direction of the forces, to the extent they are left to act on each part, will not be changed, though their intensity will be equalized.

It has been supposed by many that the science of Bridge Building was perfect, that nothing new could be elicited, that all the resources of mechanical philosophy had been expended, and every pressure and thrust to sustain a bridge was well known, but we see now many new ideas advanced and we have no doubt but they are correct ones. The innumerable quantity of bridges which have been constructed on our railroads have incited the genius and directed the attention of observing and skillful men to every point at issue and not at issue in Bridge Building. Mr. Herman Haupt, of Penn., in his late able work on Bridges, advances some excellent ideas from from page 63 to 170, and he distinctly points out a vertical strain, the very thing which is provided against by the counter braces in Severson's bridge.

Plank Roads in Missouri.

The St. Louis Intelligencer says :- A belief in the importance and value of plank road seems to be fast gaining ground, and already we find several about being commenced in our State. Among others, we note the Ste. Genevieve, Iron Mountain, and Pilot Knob plank road. This company have secured the service of Mr. Kirkwood. the Chief Engineer of the Pacific Railroad Company, under whose directions a reconnoissance of the country has just been made, and the instrumental survey about being commenced. It is the intention to push this work to completion as fast as possible, and the contract is to be made in July next. The capital stock has been subscribed. We understand the report of the reconnoissance is very favorable, and that the practicability and value of the proposed road is undoubted. The distance of Ste. Genevieve to the Iron Mountain is about 45 miles, with a branch of nine miles to the Pilot Knob, the route of the road passing through a fine agricultural country, where there is an abundance of oak and pine timber of good quality.

We believe the company purpose building

	the metal."	we would state that there is a most excel-	it is evident that any downward bending of	
	2.1 The Institute should conduct its Fairs	lent school connected with the Institute, in	the structure will produce a horizontal thrust	branches to the lead mines in the neighborhood
	without respect to persons-not forbidding one	which the children of the members receive a	of the ends of the arcs against the upper ends	
	man to exhibit one thing with some quack ex-	good education on reasonable terms. We	of these braces; thus regulating the intensity	ton nes on the main route.
I	cuse, and allowing another man to exhibit as	have, upon a number of occasions, spoken	of their tension, by the amount of pressure of a	A rare literary curiosity is noticed by the
I	much quackery as he pleases.	well of the object of this Institute, and with-	load on the bridge,-hence, the amount of	Philadelphia North American as being in the
	4th. To do their duty without fear. They	in the past three years have happily witnessed	vertical support, rendered by each brace at its	possession of Mr. E. Waterman, of that city.
	cannot expect to please all, and we would say,	its exit from the cellar in the City Hall to its	lower end, will be governed by the amount of	It is a vellum volume done in the year 1200.
	" do not try it by subterfuge and favor.	present large and respectable rooms. If five	thrust or pressure received at its upper end,	long before the art of printing was discovered.
	5th. Let all the actions of the Institute be	thousand of our young mechanics would walk	from the end of the arc bearing against it;	and the type-like clearness, regularity and com-
	above board, upright in principle, downright	up and put down \$3 each, before the Fourth	thus the tension of the braces will at all times	pactness of the lettering, as well as the exqui-
	in action.	of July, they would become members, and thus	act with an intensity in proportion to the	site delicacy and beauty of the ornamental
	The City of New York can support one of	render to themselves the privilege of the use of	pressure of a load on the bridge.	writing in colors, which illuminates every
		a large library. They would afterwards be		page of the book, constitute it one of the most
H	The Institute, about which we are now speak-	able to keep Independence Day with a clear	Severson has assumed that in the truss with-	remarkable relics that have descended to us
d	ing, has made a grand move in the right di-	conscience.	out the quarter braces, when the load does not	from the times anterior to types and printers.
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t	1,40,09			97979

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New Inventions.

Improved Machine for Bending Felloes Mr. Andrew M. Johnston, of St. Georges, New Castle Co., Deleware, has invented and applied for a patent for an improved machine for bending felloes for wheels of carriages, wagons &c., and which should receive no small attention. The principle of the invention consists in forcing the felloe timber between two curved curbs placed upon a bed-piece, the outer or larger curb being firmly secured to it. After the felloe timber is forced between the curbs. it is secured by clamps to the inner or smaller curb, and the smaller curb with the felloe attached is removed from the bed-piece by removing bolts which hold it to the same The felloe timber is forced out of a narrow box before entering the curbs, or the timbers may pass between rolls which will answer the same purpose.

Improved Grass and Grain Cutter. Mr. Wm. C, Betts, of Brooklyn, Kings Co. N. Y., has made a valuable improvement on machines for cutting grain, &c., for which he has taken measures to secure a patent. He employs a revolving cutter, by which the grass or grain is made to fall over on the platform without the aid of a conveyor reel. It also works with less friction than a commonly constructed reciprocating cutter. He also employs a series of rakes upon an endless chain, to carry off the grain from the platform and deposit it on the ground in bunches. The machine is guided in its motion by a set of guide rollers.

New Board Fence.

A new mode of constructing fences has been invented by Mr. J. Berdan, of Plymouth, Michigan, the principal features of which are not a little novel. By his plan, a good substantial and economical fence can be constructed of boards without posts. The boards for the construction of this fence have notches cut in them near their ends, and they are locked together in such a manner as to form a worm or zig-zag fence. The boards are supported in the middle by stakes passing down each side and secured together by clamps drawn together by a wedge. A brace or rider passes between the stakes resting upon the clamps, thus adding to the height and strength of the fence. The inventor has taken measures to secure a patent.

Improvement in Hanging Picker Staves in Looms.

Mr. Geo. W. Perry, of Thompson, Windham Co., Conn., has taken measures to secure a patent for a new method of hanging the pick_ er staves of looms, which deserves attention. Each picker stave is hung on two radius rods which are attached to fixed centres on the frame of the lay, being connected by joint pins, one at the lower and the other at a short distance from it. The effect produced by this arrangement causes the end of the staff which acts upon the shuttle to move in a right line parallel to the raceway, the two radius rods producing a parallel motion without any other

Mr. George Wilkes, of Louisville, Ky., has arms extending from the inner or concave known to the good housewife, and as there are between the dressing knives below, at the invented and taken measures to secure a patent side of the gate to a point which is the centre some who have to make it, we will give them same time the jointing knives on the top of for certain new and useful improvements in of the circle of which the gate forms a part. the simple direction. First be careful to prothe gate are jointing the stave. machines for cleaning grain, whereby it is The arm or arms work upon a pin or pivot at cure the article pure, as it is one very subject stated, "very beneficial results are obtained." | the point above mentioned, said pin being sufto adulteration. Cut it into small pieces and New Churn. He employs a cylindrical screen provided with ficiently strong to resist any pressure that may Mr. George B. Clarke, of Leonardsville, Ma. | boil it in soft water with an equal weight in volving beaters working in connection with ave or inner surface of the dison Co., N. Y., has applied for a patent for pearlash, in a copper boiler, say one pound to a fan blast and a number of flat inclined gate. an improvement on a churn, which is stated four gallons of water. Rinse the articles to be screens, which afford an increased screening This gate is for wheels, and the water, by to be very valuable, and owing to which, the dyed in clean water and let them boil some surface and a very effectual action within a a peculiar system of packing, acts in such term "Excelsior Churn" has been applied to time; take out and rinse. The quantity of 8 comparatively small space. manner as tends to keep it water-tight. it. The body of the churn is made to rotate anatto used must be regulated entirely by the and the cream or milk is agitated by station- depth of color required. A little experience Heating Railroad Cars. Improved Machinery for Dressing and Jointary dashers in the interior. A stream of hot will soon teach that.-[American Agricultu-A Belgian engraver, M. Blacher has introing Staves. Mr. John Hall, of Vermont, Fulton Co., duced, says the "Precurseur d'Anvers," a me or cold water, as is required to keep the tem- rist. Illinois, has taken measures to secure a patent perature at about 62°, is pumped by the acthod of heating the cars of a railway train, by [This is a color which none of our farmers should dye, because it is so fugitive. If it carrying off the smoke of the locomotive tion of the churn, through an interior tin for machinery to dress stayes, a kind of machichamber, the water entering at the one side is exposed to the sun for five minutes, it fades ; through iron pipes placed in them.-[Ex. nery which is very important in our country, and coming out at the other, or the continu- | for ribbons &c., not exposed to the sun it may [This is a borrowed idea, taken from our and every improvement made on it, is of great columns, away over to Europe and made into value, because there is such an innumerable ous motion may be suspended at pleasure. do very well, but it is a very poor color, alquantity of staves used up every year. The A stream of air is also sent by a tube into the though beautiful. Anotta is employed to dye a new invention for the Flemings. This in-ΦŢ vention is fully illustrated and described on staves are forced in between cutters by milk, &c., by annular passages to supply the a salmon and an orange color, but it should 詽 page 49, Vol. 2, Sci. Am. means of a gate having a series of vibrating necessary air for the ventilation of the churn. I never be used for woolen goods.

Scientific American.

PATENT CORRUGATED BOILER PLATES.

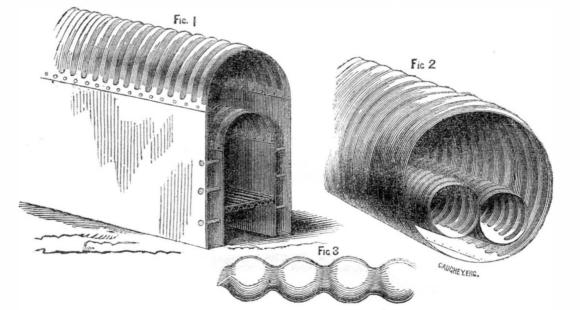
application of the new invention of Mr. Richard Montgomery, of this city, to the construction of steam boilers. Fig. 1 is a perspective view of the arched boiler with the end removed. Fig. 2 is a perspective view of boiler tubes, a side view of which in a single tube is represented by fig. 3. As the invention is so easily demonstrated, its application requires no particular reference to parts by such signs as letters ; we have therefore to describe its principal features and advantages, rather than the relative parts which are employed in the construction of any boiler.

The accompanying engravings represent the | cal flues, curved fire arches, and (if deemed | to be braced and stayed throughout. To obviate advisable) the curved shells of boilers, of corrugated plates of metal. The metal being rolled in this form, gives great additional strength and secruity to the arches, and makes them self-sustaining, without the aid of the immovable stays with which most boilers, especially sion of heating surface, and greater strength high pressure ones, are obliged to be furnished, of metal in less space than in common fire and which add so much to the unnecessary weight, and increase their liability to burn

> out and scale. be stayed with a great number of angle iron ribs and braces, and the iron of the arch itself shell of the boiler should also be made of the

these evils (for evils they are in a certain sense though not in another.) Mr. Montgomery employs arches of corrugated plates and cylindrical corrugated flues. An evident advantage gained by this form, is a great extenarches.

It is contemplated to use the corrugated surface in the flues and arches of boilers, as The fire arch of a locomotive is required to shown in the above engravings, and when great strength and lightness are required, the This invention consists in forming cylindri- I must be very thick. Marine boilers also have | corrugated plates. By employing the corruga-



ted plates in the crowns of furnaces, in the | which is a lodging place for scale, and thus a | total cost, and if to this be added the saving tops of flues, and the bottoms of cylindrical boilers, a great extension of effective heating surface is obtained, consequently the sufficient steam generating surface may be had in a reduced space without any increase in the weight of the metal. Experiments have proved that the corrugated boiler plate, in an arched form, with the flutings running in the direction of the arch, possesses such great strength that it

Improved Hand-Truck for Wheeling Bales. Messrs. Frederick and Jacob Nishwitz, of Williamsburgh, L. I., have taken measures to secure a patent for a very valuable improvement in hand-trucks. The improvement relates to the construction of the frame, and consists in the constructing it of iron, and having it so arranged that the front piece of the truck is firmly supported and braced by lips, and secured to that part which requires great strength and firmness for loading, by inserting the front piece under the bale or other article to be drawn, and then by depressing the hands to make them act like a heaving lever to roll back the bale easily and quickly on the frame of the truck.

Improved Water Gate.

Mr. J. R. Howell, of Springfield, Mass., has at one operation. A set of jointing knives are coil, before the welding. invented an improved anti-friction balance device for controlling it. attached to the upper part of the gate and act gate. The gate is of a curved shape, the curve Anotta Dye. upon the stave as the gate descends. The New Grain Cleaner. This beautiful coloris one of the readiest forming part of a circle, with one or more gate, therefore, in descending is forcing a stave

great evil is removed. There is, therefore, a | of weight and cost effected by dispensing with saving in the weight and cost of stays, and of many braces and stays, besides diminishing much labor in their construction. In long the space required for the accommodation of flues it will probably confer the additional ad- steamship boilers and those of locomotives. vantage of obviating the evils of the expan- The improvement is one of very great imporsion of the metal by which the boiler heads are strained and become leaky. It has been | person interested in the safe and economical ascertained that the saving effected in the use of steam power. The boiler of a steam weight of boiler plate alone, by the corrugated engine is like the fountain-head of a streamallows the disuse of many stays, every one of plate, amounts to a large percentage of the if it is not good the engine is of little use.

stops operated on by springs, these stops pass | Improved Method of Manufacturing Twisted horizontally through the vertical centre piece of the gate, and the stave to be dressed is placed against it, the lower end entering a slot immediately above the cutter; the gate by a system of levers, is then forced down, and the upper stop being over the top of the stave, the said stave is forced between the cutters as far as the gate vibrates ; when the gate ascends, the stop immediately beneath the upper one is forced out by its springs as soon as it gets above the stave, and it bears upon the top of the stave, when the gate again descends, and so on till the whole stave is forced betwen the cutters.

In connection with dressing the staves, there is a jointing operation, whereby the whole of the trimming of the stave is finished

tance and worthy of the attention of every

Gun and Pistol Barrels.

We learn by the London Mechanics' Magazine that a Mr. Aaron Rose, of Worcester, England, has just enrolled his description of a new method of manufacturing twisted gun barrels, which is thus described :- An iron or steel rod, or a mixture of both, of sufficient length and thickness to form a gun or pistol barrel, is wound into a compact coil, and then placed in an anvil having a semicircular groove, where it is submitted to the action of the tilt hammer. The coil is then submitted to a welding heat in an air furnace, then hammered and rolled, a stream of water being used in both cases to wash away the scale.

The tilt hammer has a groove on its face corresponding with the anvil to act upon the

Scientific American

NEW, YORK, MAY 17, 1851.

To Our Mechanics --- " Come Let us Reason Together."

It is an undeniable fact, that the great majority of our mechanics are not reading men, that is, they do not read useful and instructive works. We do not mean to say that our mechanics cannot, and do not read at all, far from it, for there are but few among us who have not received the elements of a common education: but we do say that the majority do not make a practice of reading works which expand the intellect and improve the mind. The works which they make a practice of reading, tend to grossify and puddle the mind. This is one reason why there are so few among our mechanics capable of taking charge of and managing the business they have learned as trades. It is also a reason why so many of them are rough in speech, and uncourteous in manner. There are many, very many men in our country who were once journeymen mechanics, but who now occupy high and important positions in the republic. We rejoice at this, but we are not a little sorry to add that the majority of them had to leave their trades, and become lawyers,-they at least did not move out from the workshop direct to the House of Representatives, or the Senate Chamber. Fillmore, our President, and Douglass, Senator from Illinois, were once tradesmen. but they arose to their present positions, not through the tailor's or cloth-dresser's bench, but the lawyers bench. There is not a solitary individualin our country, who has, from a lowly, elevated himself to a high position in society, but has been and is a reading man,one who has read and does read books that are books.

Those mechanics who rise to foremen and employers, are the reading men of the mass; they aspired to be something and adopted the best means to secure the desired ends. Worth and intelligence always command respect from those whose respect is worth striving for. We are not pleading for a gross struggle for wealth, although a reasonable amount of itas a provision for sickness or old age, is a laudable and proper desire, but we plead first of all for an elevation of character as a means to a social elevation among men of real worth. Wealth without worth will never make a man pass among gentlemen, as a current coin, but the man who is industrious, intelligent, trusty, and courteous, will always pass for the genuine metal.

Industry, honesty, and intelligence are of the power. I had great difficulty in progreat deal that is exceedingly interesting, qualities of character more valuable than gold curing suitable porous cells, and the manufacwithin reasonable bounds). forming a very useful book, which should be seven times purified. A talented, first rate As far as we have been able to search back, ture of such as I needed was, after great exfound in every mechanics' library. handy mechanic, without such qualities will this electro-magnetic locomotive is not the pense, given up by two of the best pottery esnever rise, for he cannot be trusted. It is not FRUIT, FLOWER, AND KITCHEN GARDEN : first that has been tried : in 1843 an electrotablishments in the country as a thing imthe smartest man who is always selected to be magnetic locomotive, weighing 5 tons, was Published by Henry C. Baird, Philadelphia practicable. This is a republication of the work of Neil, a superintendant among his fellow workman; It was, however, accomplished through the tried by one Davidson, in Scotland, but it was it is he who combines the greatest amount of who was thirty years Secretary of the "Calea failure, and so was one by a Mr. Little, in ingenuity of Mr. Ari Davis, my engineer, but abilities with those qualities which give his donian Horticultural Society." Although the England, which was tried a few years afterthey were made of weak clay, and have now, work relates principally to the science of horemployers confidence in his moral worth. We from frequent use, become so much impaired wards. We do not feel, like some, in reference have often been solicited to furnish competent to the appropriation made by Government for ticulture as practiced in Scotland, still it is a as to break from the slightest causes. Before mechanics to take charge of new establishwe started, two of them broke, and the defect Prof. Page to make experiments in the applibook that is much wanted among us, for we ments, and have found it very difficult to secation of electro-magnetism as a mechanical are in a measure but beginners, in some branchwas only partially repaired. Not far from Blacure, at any time, the proper man; and no power; nor do we think one better qualified to es of it at least. The training of fruit trees densburg two more gave way, and detracted make the experiments could have been select- is well treated, and we commend it heartily to further back than last week a gentleman wriat once greatly from our working power. On ed. We like to see a prudent liberality in mating to us from the South, uses the following all our farmers. The American apples are our return, about two miles from Bladensburg, language : "Last summer, I visited the North better than the British, but not our pears, cherking appropriations for scientific purposes, and three more gave way, and we were reduced to and purchased machinery for the manufacture we should like to see more economy in some | ries, and gooseberries. Much information is at least one half of our power. The running of chairs, and after considerable trouble hired branches of the government, so that more contained in this work about these fruits. time from Washington and Bladensburg was and every alleged to be competent to superin very farm thirty-nine minutes. We were stopped on money might be devoted to advance science the whole business. I have not yet been able den, if it is no larger than a cabbage bed, the way five times, or we should have probaand art. It is our opinion, however, that elecshould own such a book. tro-magnetism is far inferior to steam power, to commence operations, owing to the incombly made the run in less than thirty minutes. petency in every respect, of the man in whom Going and coming there were seven stops and and far more expensive. It has been stated I trusted to superintend my business; can you Premium Offered. that electro-magnetism would be more safe three delays-that is, the engines were backed Mr. E. Anthony, of New York city, offers a send me a man with the requisite qualificathree times, but without entirely losing headthan steam, as there would no explosions. We tions, and above all let him be a gentleman?" reward of \$500 for the most valuable improveway. It is a very important and interesting apprehend, that as much danger might be anment in photography, which shall be made We cannot send him the kind of man he wants feature of the engine, which I demonstrated ticipated from the acids and the gases of and and requires. Our real good men are scarce. some years since, that the reversing power is for the batteries, as from explosions. A lump before the close of the present year. The im--they soon find situations, and we believe greater than the propelling power; it is nearprovement may be in any branch of the art, of coal is a more safe and convenient support there would be more good situations for men or of any nature, and the artists of England, ly twice as great. When the engine is reverter of combustion than a carbuoy of sulphuric France and Germany are free to compete (manufacturing establishments would increase) sed, the magnetic electric induction is in favor acid. It is the combustion (using the term for if we had more men capable of filling them hoplainness) of the zinc in the battery which gefor the prize. The following committee will of the battery current, and augments its efmake the award :--Prof. Morse, Prof. Draper, norably and well. fects. The defect of the cells is easily reme- |nerates the electric force, just as the combus-ÎΨ died. The trouble growing out of the oscilla- tion of coal generates the steam force. Will the of the New York University, and Prof. Ren-We have now preached a sermon long enough for a week's calm reflection, and next week ing motion of the car can all be obviated by zinc give out more force than the coal required wick of Columbia College.

we will point out the way whereby young mechanics are sure to rise.

Prof. Page'e Electro-Magnetic Locomotive. The following we have noticed in a great number of papers as taken from the Washington Intelligencer, and communicated by Prof. Page. It details the last experiment made with his electro-magnetic locomotive at Washington. We have commented upon it briefly, this week, and may return to the subject next week.

"The locomotive, with the battery fully charged, weighs 101 tons. With the seven passengers taken on the trip to and from Bladensburg, the weight was 11 tons. Under the most favorable arrangements, eight pounds are required to start a ton on a perfectly level rail, and seven pounds will barely keep a ton in motion. Ordinarily, upon railroads, the allowance is ten pounds to a ton, but this applies only to cars unincumbered by machinery. The friction of locomotive machinery renders its draught far greater, and can only be accurately ascertained by experiment in each

The magnetic locomotive, the first of its kind ever made, is imperfect, and, from the newness and stiffness of all the work, it runs exceedingly hard. We will take 200 pounds which is below the actual power required to keep it in motion on a level portion of the road. A horse-power, upon the usual estimate, is 150 pounds 21 miles an hour, or 375 pounds 1 mile an hour. The speed of the magnetic locomotive is, we will say, 15 miles an hour on a level road (it has in fact made more) and its traction 200 pounds. We have, then, 375 pounds 1 mile an hour for one horse, and 200 pounds 15 miles an hour for the locomotive, which gives eight horse power. But the engine has more than this. It has greater power at a slow speed, and must have, by all reasonable estimates, twelve horse power;

which, as I said before, is about one half its proper capacity. One of the most serious defects arises from a want of insulation in the helices.

After the engine was placed on the road it was found necessary to throw out of action five of the helices, and these at the most important point in the stroke. This difficulty could not be remedied without taking both engines entirely out-an undertaking for which I had neither the time nor means, as the track with which we are now accommodated is soon to be filled up for the purposes of the Railroad Company. Another serious difficulty encountered, was the breaking of the porous cells in the battery, causing a mixture of the two acids, and the interception of a large portion

using rotary instead of reciprocating engines. The greatest speed attained on our last trip was about nineteen miles an hour, and about seven more than in any former experiment." In the foregoing description of Prof. Page's Electro-Magnetic Locomotive we have endea vored to discover what he means by "eight pounds are required to start a ton on a perfectly level rail." There is no mechanical power-laboring force-in mere dead weight. He says, "a horse-power is 150 pounds moving at 23 miles per hour," and the speed of his locomotive being 15 miles per hour its total weight 11 tons, gives it 8 horse-power, but he says it has more power when moving slow than fast, and its actual power is all of 24 horse.

It is very evident that the correct data for estimating the power of a locomotive, is not clearly understood-or rather, let us say, not clearly set forth in Prof. Page's communication. The power of a locomotive is not estimated by the old fashioned rale of a horsewalking at the rate of $2\frac{1}{2}$ miles an hour and drawing 200 lbs. over a pulley, as estimated by Boulton and Watt. Upon a level railroad, a horse can draw 10 tons at the rate of 2 miles per hour, but as that eminent engineer, Pambour says, "it is an unintelligible fiction to pretend to assimilate locomotives to horses." The formula for calculating the power of a locomotive is P=Wvp-f, or P=St-f. The first formula is, P, the power, equal to W, the weight multiplied into v. the velocity of the pistons, into p the pressure of steam in square inches on them, less f, the friction of the parts of the engine. The second formula is P, the power, equal to the quantity of steam, S, raised in a given time; t, less f, the friction of parts. The power of an engine is in the steam, and the quantity that can be raised in a given time, is well known by the amount of the heating surface of the boiler. The proper rule for estimating the economic value of an engine, is its cost, and the number of tons it can draw at the quickest rate with the least amount of fuel, and for the longest time with the least repairs. If it is meant by the 8 lbs. mentioned above, "the pressure and velocity," then we must take into account that every ton moving at the velocity of 30 miles per hour, experiences an atmospheric resistance of 12 pounds. The power of locomotives is not yet fully understood, we mean as it relates to their weight, evaporating power, and the load they can draw in a given time. Some locomotives of 14 tons, are more effective than others of 18 tons. There is not a single locomotive engine builder in our country but could build an engine of 10 tons, and warrant it to run at the rate of 30 miles an hour on a level rail with a light train, say 20 tons, (we keep

to smelt it? A most eminent chemist, Liebig, says no, and we believe he is right; but we have extended this article to an undue length, and will not enter at present into details of the comparison of steam and electro-magnetic economy.

Notices of Books.

THE STONES OF VENICE : By Ruskin; published by John Wiley : Broadway, New York. -This is a valuable volume by the author of 'The Seven Lamps of Architecture." It treats of the buildings of Venice-their history, style, decorations, and construction. Any work on art by Mr. Ruskin is of high value both to the artist and the thinker: and in this work, originality, a love of truth, with liberty of speech, are impressed on every line. He details the rise and fall of the once celebrated "City of the Sea," and writes her history in her stones. The illustrations are numerous and "have tongues." As a critic of works of art, Ruskin stands high. He is not squeamish about fine words, but uses those which tell the truth in the clearest manner.

EPISODES OF INSECT LIFE .- This is a beautiful volume, published by J. S. Redfield, Clinton Hall, this city. It is illustrated with some of the most quaint and beautiful figures that we have ever seen. The object of the author is to render the study of Entomology-the science of insects-more popular and attractive to the generality of mankind : and well has the incog. author, who styles himself ".Anschiti Domestuca," accomplished the object intended. We have never read a more attractive and instructive book. Those who have neither the time nor the patience to study this subject fully, but who have a desire to know something about it, should get this book; and even those who believe themselves well versed in it, will find much that is new and everything to delight.

THE TURNER'S COMPANION : Henry Carey Baird, of Philadelphia, successor to E. L. Carey.-This book treats of concentric, elliptic, and eccentric turning, with directions for using the eccentric cutter, drill, vertical cutter, and circular rest, with patterns and instructions for using them. The first thing described is the lathe, by which we learn that this machine was known to the ancient Greeks and Romans, and was used by them in turning urns and vases, and adorning them with ornaments in basso relievo. It is illustrated with a great number of engravings, such as tools and works of art, and it explains how the machinery is used, and how the works are produced. It does not treat of power-turning, such as Blanchard's lathe, but it contains a



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

LIST OF PATENT CLAIMS Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 6, 1851. To Linus Yale, Jr., of Newport, N. Y., for improved Lock and Key.

I claim, first, the self-detaching and attaching key, for the purpose and object described.

Secondly, in combination with said key, I claim a powder-proof key-hole, consisting of two or more parts so constructed that the outer part is turned by the key, while, at the same time, the inner parts, with the pod or pods of the key enclosed are disconnected and moved entirely away from the outer, the same movement causing solid metal to occupy the space left, and thus to effectually bar an entrance of any kind to the lock, when its parts are in a position possible to be unlocked.

To Thomas Vanderslice, of Valley Forge, Pa., for improvement in Meat-Cutting Machines.

I claim the herein described mode of adjusting the cutters by means of the adjusting plates.

To Charles Burt, of Belfast, Me., for Exploding Harpoon

I claim, first, the interior of the harpoon made as a pistol barrel, with percussion lock protected from water or outward accident, and the trigger of which can be actuated by means of a pull on the line, and the resistance of the flesh, substantially as described.

Second, I claim the making the point of the harpoon the projectile which is shot into the whale, in the manner and for the purpose substantially as described.

Third, I claim the arrangement of the trigger in the shank under the barb, in the mode described, preventing the explosion of the charge until the line is drawn by the whale or the harpoon.

To J. R. St. John, of New York, N. Y., (assignor to James Renwick, G. F. Barnard & E. B. St. John,) for improvement in Hand-Logs.

I claim, first, the arrangement of the log glass, lever, pinion, and wheel, whereby the motion to the clock-work by the reel is communicated to the index during a definite period of time, determined by turning the log glass on or off the lever, the parts being so proportioned, and the dial so divided, that the index, moving while the sand is running in the log glass, shows the rate of speed at which the vessel is moving per hour of time, during fourteen seconds, or any other known space of substantially as described or in a manner equivalent, to produce the same results by like means.

Second, the application of a parachute to the purpose of a "log ship," and the combination therewith of the cylindrical wedge or its equivalent, to enter between the tubes to keep the "log ship" spread, when in the wa-

rubber, sulphur, and magnesia, or lime, or a carbonate, or a sulphate of magnesia, or of lime, either with or without shellac, for making a hard and inflexible substance hitherto unknown, substantially as herein set forth.

To J. R. Kain & Spencer Lewis, of Tiffin, Ohio, for mprovement in Bedstead Fastenings.

We claim providing the upper section or part of the cylindrical box, with a triangular and two parallel wedge-shaped wings, made sharp and projecting from its periphery, in such a manner that the triangular projection shall open a groove or way in the post, which shall be closed by the entrance of the parallel wedge-shaped wings, which follow as the section is driven into the post, and thus crowd the wood in front of the shoulder of the triangular projection, and form a complete lock thereto, as described.

We also claim dividing the cylindrical box longitudinally into two equal parts or sections, the line of division inclining upward at an angle of about 10 degrees from a horizontal plane, by which the edges of the upper section are made to serve the purpose of wedges for forcing the teeth of the lower section into the post and holding it securely, as described.

To J. A. Cutting, of Philadelphia, Pa., for improved Spark Arrester.

I claim, first, the air flues in the lower part of the diaphragm constructed in the manne and for the purpose herein described.

Second, I claim the pipes or conductors in combination with the air chambers (two) ar ranged substantially as herein described.

Third, I claim the combination and arrangement of the air flues with the air chamber, reverberating cone, inclined and curved flues, for the purpose and in the manner herein fully set forth and described.

To Nelson Newman, of Cincinnati, Ohio, for improvement in Pumps.

I claim the combination and arrangement of the valve chest, water passage, pump cvlinder, and air vessel, as herein described, so that the whole can be cast in a single piece, and the valves and suction pipe supported and secured in place by another piece also cast in the form herein described, whereby the cost of making the pump, and its liability to get out of order, are both lessened without impairing its efficiency or rendering it more difficult to repair.

To R. E. Schroeder, of Rochester, N. Y., for improvement in Lime Kilns.

I claim the flues encircling the cupola and provided with apertures or flues (five) for admitting the heat and flame to the action upon the limestone, from various points, substantially as described, in combination with the air chamber encircling the cupola as described.

And I claim, also, the aperture and passage therefrom, for saving the heat arising from the manufactured lime while being removed, all operating conjointly in the manner and for the purpose herein fully set forth.

To John Gorrie, of New Orleans, La., for improved process for the artificial production of ice. Ante-dated Aug. 22, 1850.

I wish it to be understood that I do not claim as my invention any of the several parts of the apparatus in themselves, but I claim, time; the parts being arranged and operating first, the employment of a liquid uncongealable at the low temperature at which it is required to keep the engine, to receive the heat of the water to be congealed, and give it out to the expanding air.

Second, I claim the employment of an engine, for the purpose of rendering the expansion of the condensed air gradual, in order to vailable the

serves as a medium to absorb the heat from the liquid to be cooled or frozen, and give it but is not sufficiently high to decarbonize it out to the expanding air.

To Florentin Joseph de Cavaillon, of Paris, France for improvement in purifying Illuminating Gas.

I claim the purifying powder for illumina ting gas, said powder consisting of sulphate of lime, either natural or artificial, in connection with some inert substance, or substances, partly inert and partly rendered purifiers, when compounded in the proportions substantially as described herein.

To T. J. Sloan, of New York, N. Y., for machine for assorting screw blanks, etc.

I claim the combination of the series of shifting ways, with the main or stationary ways, for the purpose and in the manner substantially as specified.

And I also claim the detector, substantially as specified, in combination with the stationary and shifting ways, substantially in the manner and for the purpose specified.

RE-ISSUES. To J. B. Hyde, of New York, N. Y., (assignor to

T. J. Croggon, administrator of T. R. Williams, deceased), for improvement in machinery for hardening bats in felting, &c. Originally patented Dec. 14 1840

What is claimed as the invention of the said Thomas Robinson Williams, is the method substantially as described, of forming the bat by the combined use of two endless aprons which receive the sliver from the doffer, or a carding engine, or otherwise, between them, and from the bat on one of the belts, whilst the other acts as a support, substantially as described.

To J. B. Hyde, of New York, N. Y., (assignor of ThomasCroggon, administrator of T. R. Williams, deceased), for improvement in machinery for forming bats for felting, &c. Originally patented December 14, 1840.

What is claimed as the invention of the said Thomas Robinson Williams, is, first, the method substantially as described of hardening the bat, by passing the same between two series or tiers of rollers, covered with cloth, or otherwise, and arranged over each other, the one series being provided with a reciprocating, endwise motion, for the purpose of felting the bat: and the other series with a progressive rotary motion, far the purpose of feeding the bat through, with or without the use of a trough, containing hot water and soap-suds or other matter, substantially as described.

(For the Scientific American.)

Practical Remarks on Illuminating Gas. [Continued from page 270.]

The process of making oil gas is much more simple than that of coal gas; as the purification is wholly dispensed with; the constituents of the oil being such that there is no combination of sulphuretted hydrogen or ammonia. In the arrangement of the generating apparatus, the two processes differ essentially. The oil is not introduced into the retort and subjected to decomposition in quantity as is the coal; for in such a case the greater part of the oil would distil over, without undergoing much alteration, and the portion only which is in immediate contact with the heated surface would be converted into combustible gas. What is required and the chief object to be obtained is, to bring a small quantity of oil to a high temperature, in order that all its particles may be decomposed at once; and for this purpose the following arrangement for generating is used:

The ordinary oil gas apparatus consists of a small cylindrical retort of cast iron, set in a obtain its full refrigeratory effects, and at the furnace, and brought up to a proper tempera- add to this the loss of gas in the main pipes, hich is found to be fully twenty per cent. ture by fire which is conveyed around it by suitable flues. The retort is partially filled with coke, brick, or some other similarmaterial, for the purpose of presenting a larger amount of heated surface: the oil is then conducted from a reservoir above, through a pipe in a small stream into the retort upon the heated surface, when it is immediately decomposed; gases are given off, accompanied with a considerable quantity of vapors which are liquid at common temperatures, and a large deposition of carbon takes place in the retort. The coke or bricks are changed every fort-

engine and returned to the cistern, and which is produced at a low temperature; as this temperature suffices to convert the oil into gas, to any great extent. The secondary and the only product of this distillation is an oily fluid, consisting of tryile, dytryile; and a third hydro-carbon.

> From the retorts the gas is conveyed into condenser similar to the one described under coal gas, and from thence, after passing through the meter where the quantity is registered, it is conducted into the gas-holder, where it is ready for distribution, which is performed in the same manner through street mains as the coal gas. In some manufactories, of late years, the gas before entering the street mains, is allowed to pass through a "mixer," by which from 20 to 231 per cent. of atmospheric air is permitted to unite with it; and it has been stated by the patentee, (for by the way this mixer is a patent article) and others interested, that this is an improvement, and enhances the value as an illuminating agent. It must appear, I think, very evident to an unprejudiced mind that mixing air with gas is a corruption by this foreign compound and not an amelioration. It may be an improvement as regards quantity, I admit, but the quality will be lessened in an exact ratio to the adulteration.

> A serious objection to oil gas, is the gradual liquefaction which its important constituents undergo; the gas contains too large a proportion of vapor, which is constantly condensing while standing even at common temperatures; and not only a great. loss is sustained, but no small inconvenience from the clogging and stopping of pipes. In England much controversy was carried on between the oil and coal gas companies; large amounts of money were expended in the erection of oil gas establishments, and great skill and strict economy were used to promote success; to sustain them no effort was wanting on the part of those who had invested their money; and, in opposition to facts which were glaringly evident to the most careless observer, it was proclaimed that the illuminating power of oil gas was threefold greater than that of gas made from coal, and that it possessed, therefore, three times its value, whereas it has been demonstrated, that, by converting oil into gas, a loss of nearly one-third of its value for purposes of illumination is sustained. The following extracts from the Enclyclopedia Britannica will fully substantiate these statements. "Oil being decomposed at a loss of nearly fifty per cent., the conversion of it into gas, after a protracted but ineffectual competition with coal, has been gradually abandoned on the large scale, even in those places where, from the interests of the whale fisheries, there were the strongest inducements to foster the unfounded prejudices which prevailed for sometime against the use of coal gas. The exaggerated advantages which it was pretended would be derived from compressing oil gas, and thus rendering it portable, served to prolong the gross delusion on the subject. Nor were these delusions fully removed, until a demonstration was given of the failure of the scheme, in the decay of costly edifices and expensive apparaatus, which, in defiance of all sober calculations had been constructed for carrying it into effect." "The capital expended upon oil gas establishments is actually applied to reduce to the extent of thirty per cent., the intrinsic value of the raw material, which it was pretended to improve in an equal degree;

ter, and disengaged when hauled on to "fetch home," so that the log ship closes and turns end for end with the water, and is easily hauled on board, said log ship being used with the reel and registering parts herein described and shown, or with any other means of supplying and determining the amount of line run out during a known period of time, substantially as described and shown.

To Nelson Goodyear, of New York, N. Y., for improvement in the manufacture of India Rubber. I claim the combining the india rubber and sulphur, either with or without shellac, for making a hard and inflexible substance hitherto unknown, substantially as herein set forth. Шæ And I also claim the combining of india liquid, which is continually injected into the The best results are obtained when this gas from coal.

force with which it tends to dilate, to aid in working the condensing pump, irrespective of the manner in which the several parts are made, arranged, and operated.

Third, I claim supplying the water gradually and slowly to the freezing vessels, and congealing it by abstracting the heat from its under surface, substantially as set forth. And lastly, I claim the process of cooling or freezing liquids by compressing air into a reservoir, abstracting the heat evolved in the compression, by means of a jet of water; alnight or three weeks, as the interstices belowing the compressed air to expand in an engine surrounded by a cistern of an unfreezable come obstructed by the deposite of carbon.

and it follows that the light from oil gas is obtained at twice the expense at which it may be procured from the oil itself." Manufactories for the generating of gas

from oil have also been erected in this country, and the gross delusion has been somewhat prolonged by the introduction of the supposed improvement, viz., the mixer; but the results have been the same, the amounts expended have been sacrificed, the works abandoned and superseded by a cheaper light, and it is now very generally acknowledged by all scientific persons, that gas made from oil can never successfully compete with that generated J. B. B.

TO CORRESPONDENTS.

L.R. P., of Me .- When the weight is increas from 200 lbs. to 400 lbs., and changed to the middle of a lever from the end, say from a 5 feet oar to 21-2 feet from the thole-pin, then, if the 400 lbs. made a double stroke, it would exert a double power, but as it makes the same strokes as before, it has only the double weight in the arc, which the weight slowly describes. It brings more strain upon the thole-pin but does not add speed to the boat. Every loss of pressure on the outer end of the oar, involves a loss of speed, unless it involves a gain of speed.

W. Y. L., of Geo.-The method of gearing so as to make the two stones run in opposite directions, as shown by your sketch, would not be patentable in itself, as it is well known, but we cannot see how any power would be saved,-rather the extra friction by the gearing will be a loss. We admit, however, that the transverse grinding surface action would be superior, and so far as we have been able to discover by examination, there is no patent for the same.

H. C., of L. I., N. Y .- The engine has more labor in proportion to the length of the horizontal shafting it has to drive, but every single machine on the same line requires as much effort of the engines as another. This is as we understand it.

H. T. E , of Ohio.-We do not see any thing paten table in either of your contrivances. The brake is not patentable and the matchingmachine is essentially the same as the one for which a patent is now pending. We cannot advise you to make an application. G. M., of N. Y.-We cannot send you a drawing of

Mr. Eurnet's Horse-shoe Nail Machine at present, but presume we shall present our readers with an engraving of it before many weeks. Mr. Burnet resides in Boston, Mass.

T. A., of Ind.-The lathe to which you refer will not turn spokes, but you can obtain one that will, by addressing Abner Lane, at Killingworth, Ct.

J. R., of N. J.-We do not sell patent rights; our business is to make application for patents, leaving the subsequent management to the inventor or patentee. There is no call for such an improvement as you describe.

P. Y., of Pittsburg .--- Glad to hear of your success We shall be prepared to execute your papers with dispatch, upon receipt of the necessary instructions. Davidson is not known here. We say with you, "success go with him."

H. H. M., of Ind .- We shall examine your ca soonas we can dispose of preceding cases. H. T., of Mass -You will find engravings of Mr.

Wiley's Blind Machine in No. 27, Vol. 3, Sci. Am.

J. R., of S. C .- We have forwarded your letter of inquiry to the parties interested in the machine, who undoubtedly will give you attention. \$2 received and credited as requested.

M. R. H., of Wis.-Weare so much occupied with business pressing upon us all the time in the office that we cannot find time to collect the information you require about the rule. If we knew of any one who is engaged in the business we would attend to your wants with pleasure. S. A., of Pa.—We do not see any thing patentable

in your contrivance for saw-mill's. A model in our office possesses essentially the same features.

E. M., of Mass.-If a straight piece of wire which has been rendered magnetical, be twisted in a spiral form, its magnetism will be strangely confused; in some parts it will attract, in others repel the same pole; and this will, in some portions of the wire, take place on its oppositesides. This experiment appears to indicate the disposition of the fluid to flow in a right line.

Doliver J., of Mass.-On page 175, Sci. Am., we asked you why you had not answered our letter which was sent to you more than two months before. We also mentioned that we had your papers as explained in the said letter ; please write as soon aspos sible.

W. R. G., of N. Y.-It is proved that there is such an engine as you describe on exhibition at the Lon don Polytechnic Institute, older by several years than yours.

A. A. D., of Ala.-We do not know what the ex pense of the hydraulic ram would be at present, nor if it would practically pay for the same, so as to answer a good purpose in the case to which you refer. We believe it would not, but we will endeavor to see one who has erected and who makes them, and get correct information on the subject.

T. B. H., of Me .- The persons you speak of have not consulted us. We have no account with I. R. at all. We believe your improvement is a very good one and patentable. L. W., Jr., of Mass.-We think your contrivance

different from any other known or used, and incline to the opinion that you can obtain a patent. If you should conclude to proceed, a model of the usual

G. C., cf Mass.-We believe your plan of the wings" to be a patentable subject.

"A. M., of New Market, Tenn.-You may send on a description and sketch of your invention, and we will give our opinion upon it cheerfully. M. M., of N. J .- Four-way-cocks were used by

Leunold upwards of 100 years ago. Trevithick used them subsequently on locomotive engines

A. A. M., of Mass.-We commend to your attention the series of articles upon the subject of gas now in course of publication in the Sci. Am.

WI R., of Ct .- We have never heard of a double furnace built and applied in the same manner as yours. We believe it to be patentable. Your test of its merits is evidence of its usefulness.

Steam, "Stame."-We have received a communication from Mr. James Frost, engineer, in relation to this subject; it is unavoidably delayed until next

waek. R. S., of N. Y.-If you wish to do yourself some good, get an engraving of your invention published in our columns; it will only cost you \$10 for such a one as would explain it fully. Everybody who desires to be posted up on what is new in machinery, takes the Sci. Am. Your invention would be introdu ced to more than 20,000 persons.

R. J. S., of Pa.-Do not go to law about your pa tent in its present state; you will have to enter a disclaimer, for it is very evident that the document is poorly made out, and does not cover the desired ob

Money received on account of Patent Office busi ness since May 5 :

P. D., of Pa., \$30; C. S. G., of Vt., \$20; F. J. & Co., of N. Y., \$55; G. W. L., of N. Y., \$55; F. & J. N., of L. I., \$40; G. S. of O., \$40; E. B., of N. Y., \$400; J. H., of Texas, \$60: J. S. R., of Ct, \$50; D. W. E., of N. Y., \$25; S. & P., of L. I., \$20; J. C. A. of N. Y., \$20; K. D., of L. I., \$15.

Specifications and drawings of inventions belonging to parties with the following initials, have been forwarded to the Patent Office since May 5:

S. C. A., of N. Y.; D. E. S., of O.; G. B. C., of N Y.; S. & P., of L. I.; F. & J. N., of L. I.; T. B., o. Mich.

New Edition of the Patent Laws.

We have just issued another edition of the Ameri can Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office W shall continue to furnish them for 121-2 cts. per copy

Patent Claims.

Persons desiring the claims of any inventior which has been patented within fourteen years can obtain a copy by addressing a letter to this office; stating the name of the patentee, and enclosing one dollar as fee for copying.

ADVERTISEMENTS.

Terms of Advertising : One square of 8 lines, 50 cents for each insertion 12 lines, 75 cts., " " " 16 lines, \$1,00 Advertisements should not exceed 16 lines, and cuts

cannot be inserted in connection with them at any price.

American and Foreign Patent

American and Foreign Patent Agency. MPORTANT TO INVENTORS.—The under-signed having for several years been extensively engaged in procuring Letters Patent for new mechani-cal and chemical inventions, offer their services to in-ventors upon most reasonable terms. All business entrusted to their charge is strictly confidential. Pri-vate consultations are held with invectors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Mo-dels can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible. Having Agents located in the chief cities of Eu-rope, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the special attention of one of the members of the firm, who is prepared to advise with inventors and manu-facturers at all times, relating to Foreign Patents. In the time of changes slone, parties having brainess to yranact abroad, will find it for their interest to consult with us, in preference to any other concern. MUNN & CO., 128 Fulton street, New York.

WILLIAM W. HUBBELL --- Attorney and Counsellor at Law, and Solicitor in Equity, Philadelphia, Penn.

TMPROVED STEAM ENGINE-Patent Right for sale. The theory of this improvement con-sists in admitting upon the piston an instantaneous jet of high pressuresteam, the valve for this purpose opening and closing instantaneously. This minute quantity of steam, by its expansive force, propels the piston to the end of its stroke, and then, spontaneousby condensing, produces a vacuum beneath the piston which promotes the energy of the engine. A great power, with a trilling expense of steam is obtained by this invention. Apply to C. J. CONWAY, 81 Leo-nard st. N. Y., where the operation of the principle may be seen. 1*

LAW'S PLANER FOR PLANK, BOARDS, Ac., is now attracting much attention on account of its effectiveness, the excellence of its work, its simplicity, and consequent economy. Machines are now in operation in Brooklyn, New York City, and at various points South and West. Rights or ma-chines for sale by H. LAW, 23 Park Row. 35 tf

WANTED.--A gentleman residing in Alabama is desirous of obtaining the services of a man of soundjudgment and good morals, who has no wife --one who understands thoroughly the business of manufacturing ehairs. No one but a man who can give the best of reference as to qualifications need apply. Address (post-paid in all cases) to MUNN & CO., this office. 35 4

M tention of Mechanics, inventors, and artisans is especially called to the Polytechnic Exhibition, which will open at the rooms, cor. Bowery and Division st, on the 15th; of May. Those who wish to exhi-bit models, machinery, &c., of mechanical skill, and those who would like to carry on, permanently, any mechanical occupation that would be in any way cu-rious or attractive to visitors, are requested to call on the Actuary. Steam power will be provided. Well-lighted, warmed, and airy rooms can be had on liberal terms. As this Exhibition is permanent, an excellent opportunity is offered to skillful mechanics to bring themselves into notice. Articles may be sent in im-mediately and will be taken care of and insured. Z. PRATT, Prest.; T. C. DODD, Actuary. 34tf

MOUNT PROSPECT INSTITUTE, West Bloomfield N I (6 miles from No. West Bioonfield, N.J. (6 miles from Newark).—The object of this Institution is to prepare lads for business in every department of active life; mathematics and the sciences receive particular attention; surveying and civil engineering is carefully attended to; veying and civil engineering is carefully attended to; students make frequent surveys, and prepare draughts and maps of their surveys, and draw plans of bridges, locks of canals, &c. Instruction is also given in li-near, perspective, and mechanical drawing. Terms from \$160 to \$200 per year. The sessions commence on the first day of May and November. WARREN HOLT, Principal and Proprietor. References—Geo. Gifford, Esq., 17 Wall st.; S. R. Parkhurst, Esq., 70 Broadst., N. Y.; Prof. James J. Mapes, Newark, N. J.

L Pearlat 60 Berner N W T EONARD'S MACHINERY DEPOT, 109 Pearl st. 60 Beaver, N. Y.—The subscriber is constantly receiving, and offers for sale, a great va-rlety of articles connected with the mechanical and manufacturing interest, viz., Machinists' Tools—en-gines and hand lathes, iron planing and vertical drilling machines, cutting engines, slotting machines, bolt cutters, slide rests, universal chucks, &c. Car-penters' Tools—mortising and tennoning mac ines, wood planing machines, &c. Steam Engines and Boil-ers, from 5 to 100 horse power. Mill Gearing,-wrought iron shafting, brass and iron castings to add to order. Cotton and Woolen Machinery furnished from the best makers. Cotton 6ins, hand and pow-er, and power presses. Leather Banding of all widths, made in a superior manner, from the best oak tanned leather, Manufacturers' Findings of every de scription—bobbins, reeds, shuttles, temples, pickers, oard clothing, roller cloth, petato and wheatstarch, oils, &c. P. A. LEONARD. 33tf.

PATENT CAR AXLE LATHE.—I am now manufacturing and have for sale the above lathes: they will turn and finish six sets per day, weight 5,000 lbs., price \$600. I have also for sale my Patent Engine Screw Lathe, for turning and chuck-ing tapers, cutting screws, and all kinds of common job work; weight 1500 lbs., price \$225, if the above lathes do not give good satisfaction, the money will be refunded on the return of the lathe, if within six months. 32 13* Hartford, Conn.

FOOTE'S' INFALLIBLE COUNTERFEIT Bank Note Detector, at Sight : applicable to all Banks in the United States, present or future ; illus-trated with steel plate and diagrams ; highly recom-mended by bankers and brokers. Price \$1,00, inclu-ding a magnifying glass (mailable). Address MUNN & CO., 30ew Office of the Scientific American.

1851 TO 1856-WOODWORTH'S PA-Ninety-six hunhredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines, which may be seen in constant operation in the steam planing mills at Boston, Philadelphia, New York, Albany, Troy, Utica, Rome, Syracuse, Geneva, Albion, Lockport, Buffalo, Jamettown, Gibson, Binghampton, Owego, dc. The price of a complete machine is from \$100 to \$1,000, according to size, capacity, and quality. Personsholding licenses from the subscriber are pro-tected by him against infringements on their rights. For rights to use these machines in the Counties of Celumbia, Dutchess, Queens, Richmond, Suffolk, Westchester, and other unoccupied cousties and townsof New York and Northern Pennsylvania, ap-ply to JOHN GIBSON, Planing Mills, Albany, N. Y. 27 eow6*

LOCKS FOR CHURCHES, PUBLIC

SCRANTON & PARSHLEY, New Haven, Conn., will have finished by the 10th of May, 12 Slide Lat...cs, with 8, 10, and 12 feet beads; these lathes swing 21 in., have back and serew gear, have over-head reversing pullies, all hung in a cast-iron frame, with drill, chuck, centre, and follow rest. S. & P. will also have 12 upright drill presses ready to ship at the same time; they have also constantly on hand 5 and 9 feet power planers, the same as hereto-fore advertised in this paper. Hand Lathes and slide lathes constantly on hand. Cuts, with full descrip-tions and prices, of the above tools can be had by ad-dressing as above (post-paid.) 33tf

CARD.—The undersigned beg leave to draw the attention of architects, engineers, machi-nists, opticians, watchmakers, jewellers, and manu-facturers of all kinds of instruments, to his new ard extensive assortment of fine English (Stubs) and Swiss Files and Tools, also his imported and own manuiactured Mathematical Drawing Instruments of Swiss and English style, which he offers at very rea-sonable prices. Orders for any kind of instruments will be promptly executed by F. A. SIBENMANN, Importer of Watchmakers' and Jewellers' Files and Tools, and manufacturer of Mathematical Instru-ments, 154 Fulton st. 29 3m*

ments, 154 Fulton st. 22 3 m² **D** ICK'S GREAT POWER PRESS.—Th public are hereby informed that the Matteawan Company, having entered into an arrangement with the Patentee for the manufacture of the so-called Dick's Anti-Friction Press, are now prepared to exe-cute orders for the following, to which this power is applicable, viz.—Boiler Punches, Boiler Plate Shears, Saw Gummers, Rail Straighteners, Copying and Seal-ing Presses, Book and Paper Presses, Embossing Presses, Presses for Baling Cotton and Woollen Goods —Cotton, Hay, Tobacco, and Cider Presses; Flax-seed, Lard, and Sperm Oil Presses; Stump Extract-ors, &c. &c. The convenience and celerity with which this machine can be operated, is such that on an average, not more than one-fourth the time will be required to do the same work with the same force required to do the same work with the same force required by any other machine. WILLIAM B. LEONARD, Agent, 25tf No. 66 Beaver st., New York City.

MACHINES FOR CUTTING SHINGLES. MACHINES FOR CUTTING SHINGLES. Shingle Machine, under every circumstance where it has been tried, fully establishes its superiority over any other machine for the purpose ever yet offered to the public. It received the first premium at the last Fair of the American Institute—where its operation was witnessed by hundreds. A few State rights re-main unsold. Patented January 8th, 1850,—13 years more to run. Terms made easy to the purchaser. Address, (post-paid) JAMES D. JOHNSON, Redding Ridge, Conn., or Wm. WOOD, Westport, Conn.. All letters will be promptly attended to. 10tf

JANESCH S IMPROVED SAW GUMMERS – for gumming out and sharpening the teeth of saws can be had on application to G. A. KIRTLAND, 205 South st., N. Y. 10tf

TO PAINTERS AND OTHERS.-Ame-ricen Anatemic Drier, Electro Chemical grain-ing colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age-is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are sub-mitted to the public without further comment. Manu-factured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N., by QUARTERMAN & SON, 22tf Painters and Chemists

M ACHINERY.--S. C. HILLS, No. 12 Platt Street, N. Y., dealer in Steam Engines, Boil-ers, Iron Planers, Lathes, Universal Chucks, 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; Mortici' & and Tennoning Machines, Belt-ing, machiner Voil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 20tf

BAILEY'S SELF-CENTERING LATHE, for turning Broom and other handles, swelled work, chair spindles, &c.; warranted to turn out twice the work of any other lathe known-doing in a first rate manner 2000 phoom handles and 4000 chair spindles ardiday and the work in warnet in order spindles periday, and other work in proportion. Orders, post-paid, may be forwarded to L. A. SPALDING, Lockport, N. Y. 21tf

OREIGN PATENTS.-PATENTS procured CORECON PATENTS.-PATENTS procured in GREAT BRITAIN and her colonies, also France Belgium, Holland, &c., &c., with certainty and dis-patch through special and responsible agents appoint-ed, by, and connected only with this establishment.--Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application JOSEPH P. PIRSSON, Civil Engineer, 24tf Office 5 Wallstreet, New York.

RAILROAD CAR MANUFACTORY.--TRA-Passage, Freight and all other descriptions of Rail-road Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Fac-tory in the Union. In quality of material and in workmanship, beauty and good taste, as well as strength and durability, we are determined our work shall be unsurpassed. JOHN R. TRACY, 16tf. THOMAS J. FALES.

AP-WELDED WROUGHT IRON TUBES for Tubular Boilers, from 1 1-4 to 7 inches in di-ameter. The only Tubes of the same quality and manufacture as those so extensively used in Eng-land, Scotland, France and Germany, for Locomo-tive, Marine, and other Steam Engine Boilers. THOS. PROSSER & SON, Patentees, 16tf 28 Platt st., New York.

AARON KilBORN

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Scientific American.

Scientific Museum

For the Scientific American. The Motion of the Earth Rendered Visible.

[We request the particular attention of our readers to the following perspicuous description of the new beautiful experiment which demonstrates the motion of our planet.]

The accounts of the interesting exhibition now being made at the Pantheon, in Paris, brought to us by the foreign papers a fortnight since, employ methods of illustration that, to some minds, are obscure. The following may prove less so:

Suppose a pendulum at the North Pole vibrating across a circular table. As the plane (or direction) in which the oscillation takes place does not change, while the table below revolves with the earth from west to east, the pendulum will approach an observer at each oscillation from a new point, its plane will seem to revolve. In twenty-four hours the plane of oscillation will have completed an entire revolution from east to west around the earth's axis: or, more correctly speaking, the plane having been at rest, the earth will, in | by the eye to which the hook is fastened, will twenty-four hours, return to its former position.

Suppose now, for convenience of illustration, the earth northward from this meridian of latitude to be flat, the table to be extended from the pole on every side to the meridian, and over it a pendulum of proportional length to be suspended. What is true of the lesser table will be true of the larger : it will revolve with the earth. The pendulum thrown into oscillation above, will continue to oscillate in the plane of its first vibration, and will seem to be approaching an observer successively from points farther to the right.

Now, conceive a small table in the margin of the larger, and over it a lesser pendulum made to oscillate in a plane parallel to that of the larger pendulum. As the lesser table revolves with the larger, it will, in twenty-four hours, accomplish a revolution-not around its own centre, but around that of the larger table, and the lesser pendulum oscillating continually in a direction parallel to that of the larger, will perform an entire revolution round the table. If the larger table and its pendulum be omitted from the illustration, we shall, with a little modification, have the phenomenon now exhibited at the Pantheon.

At Paris, the time required for the return of

These facts suggest a new method of deter-

pp

days on exhibition in the Laboratory of the H Scientific School at Cambridge, and has been the centre of considerable interest to persons T in the vicinity. The pendulum is 36 feet long, and consists of a slender copper wire less than a medium sized pin in diameter, suspending a pear-shaped weight of four pounds. A few inches above the weight a wooden circle is erected, and upon it, on opposite sides, are placed two movable cards, subdivided by the same number of vertical black marks, an eighth of an inch apart, the centre lines of the two cards being diametrically opposite to each

card, and, after coming to rest, is permitted to sweep, it reaches the extreme left division on the opposite card. The advance of each individual oscillation cannot be readily seen, but after sweeping two minutes, its progress becomes abundantly apparent, and in about 20 minutes it advances nearly an inch, or speaking more correctly, the earth advances that distance while the plane of oscillation remains unchanged.

It may not be uninteresting to your readers to know that this beautiful experiment is so simple that it may be readily repeated in most of our dwellings. Wherever a clear space of from 25 to 40 feet in height, even if it be not more than a foot in breadth, can be commanded, there the experiment may be made. The continuous stairways, from the first floor to the attic, in many houses, provide the desired space. Over this a screw, driven into the ceiling, furnishes the point of attachment. From the screw, by a slender copper or iron wire, of a diameter less than that of a medium-sized pin, a weight of about four pounds may be suspended.

An ordinary steelyard weight, of the larger size, attached to the wire, not by the hook but answer the purpose well. The weight should come within two feet of the floor; place two chairs, .ack to back, at the extremes of the sweep of the pendulum, some four feet apart, and fix by pins a strip of finely ruled paper (the lines perpendicular) on the top piece of the back of each chair-on the back of the chair more distant, on the inside or front of the chair nearest the observer. Now, having tied a thread around the weight, draw it near to one of the vertical marks. When the weight and the wire have come entirely to rest, burn the thread, and the pendulum will commence its oscillations. Note the point of departure, and the mark to which it sweeps on the back of the chair opposite. It will be observed in a few moments that the pendulum will return to a mark a little to the left of that of its first departure, and will sweep to a point a corresponding distance to the right of the E. W. H. mark on the chair opposite.

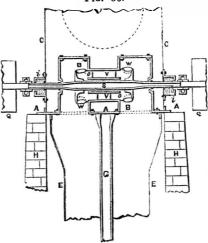
Cambridge, May 8, 1851. For the Scientific American Hydraulics. (Continued from page 272.) FIG. 49.

the pendulum to its first point of departure, is more than 30 hours (30 hours and 40 minutes). That the time must be more than that required at the poles (24 hours) will be obvious if we reflect that at the equator the plane of oscilla--30 tion of the pendulum, with regard to the poles or any object fixed upon the earth, will not revolve. Any where between the poles and the equator the time will vary from 24 hours (the least time) to infinity. In a latitude lower than that of Paris, the -20 time required for the return of the pendulum to its first point of departure, will be more T than 30 hours. At Boston it will be 35 hours and 36 minutes, a quantity obtained by divi-1 H ding 24 by the sine of the latitude. T mining latitudes : the arc through which the plane of oscillation sweeps in a given time T 1 bearing a certain relation to the distance from the poles. The above experiment has now been ten 1 Z We select the accompanying figure from the MS. of Mr. Z. Parker to illustrate the application of his water wheels and air-tight drafts, to falls of great height. This subject is one other. When the weight is drawn to the rim for which we solicit the strictest attention, of the circle, so as to bring the wire of suspen- because it is so important, and opens up a sion against the extreme right division on the new field of Hydraulic Engineering. prospect of a speedy death, I was pursuaded price 75 cents.

Fig. 49 is a vertical section across the axis | to put myself under the care of Dr. Gilbert of the wheel with elevation of draft chambers and double helix.

Figure 50 is a vertical section through the axis of the wheel with the drums, Q Q, (in broken lines) on the shaft, A is the main disc, B B draft chambers, C cylindrical penstock, D is the cover, E is the draft tube, F is the induction tube, G is the column to support the main disc, H is the pit wall, W is the wheel, S shaft, i i journal pillows, O is the double helix sluice, V is the double helix partition forming sluice, h is the gate.

FIG. 50.



The engravings, without the conduit from the mountain, exhibit the application of the wheel to a fall of 100 feet, and of 1,320 horse power.

DIMENSIONS .- Orifices of wheel, 400 square inches; diameter, 44 inches; 9,597 cubic feet of water discharged per minute; working speed of wheel, 363 revolutions per minute; drums 5 feet 4 inches diameter; speed of belts, 6,084 feet per minute; tension 7,110 lbs. (711 lbs. each belt); width of belt, 13 inches at 40 lbs. tension per square inch; downward pressure on main disc, 894,700 lbs.; upward pressure of water on penstock cover, 548,880; pressure per square inch at bottom of penstock, 26,47 lbs; diameter of pulleys on a line of shafts of the mill for 150 revolutions per minute, 12 feet 11 inches.

We shall give the estimated cost of a wheel of this kind in our next. We shall also present Mr. Parker's views on the system.

Treatment of Cancer.

We have had occasion before to call the attention of our readers to the success with which Dr. Samuel Gilbert, of New Orleans, has treated the horrible disease of cancer. We have not done this without positive and satisfactory assurance of the facts being beyond a question. We learn that ex-Governor Tucker, of Mississippi, was induced to apply to Dr. Gilbert in his own case upon the strength of our endorsement, and we have since been informed by letter, and we also notice the successful issue of his case in the New Orleans Delta, a journal of undoubted standing. With this and other corroborating testimony we feel that we are doing the community good by publishing the case of Wm. Baldwin, which was communicated to us a few days since. The editor of the Delta, under date of April 28, says he saw Mr. Baldwin, and bears testimony to the facts we present below, which are given in Mr. Baldwin's own words :

"About eighteen years since, a cancerous affection made its appearance under my left eye. It increased in size, and grew deeper and deeper. Becoming alarmed, I applied to Dr. Hubbard, a highly respectable physician then of Natchez, who prescribed for me, but hefrankly stated that he considered the case a very doubtful one. Subsequently, I applied to Dr. Crane. His treatment failed. In 1848, in company with Dr. Rex, I went to Philadelphia and consulted Dr. Mutter, a distinguished professor of surgery. He advised against the use of the knife. He candidly said that he considered the case incurable, and that I had better submit with fortitude to my

At that time my vision was almost entirely destroyed, the cancer had affected my nose, the adjacent bones had become diseased, and even occasionallally rotting out. I was under treatment until the 15th of June, and thanks be to God and the miraculous skill and perseverance of Dr. Gilbert, I am now well. Without the aid of a knife, he removed the cancer and a part of the bone. My sight has been restored, and my general health is good. I have been a resident and planter of Jefferson county in the State of Mississippi, in the same settlements where I now reside, since 1800. I am a member of the Baptist Church, and in gratitude to God and the truly eminent man who has snatched me, as it were from the grave, I make this statement for the benefit of my fellow-sufferers."

We learn that Dr. Gilbert intends to make this city his permanent residence before long.

Old Oil from the Sea.

A Plymouth paper states that fourteen fortygallon casks were thrown on shore at Marronet Ponds during the late gale, containing linseed oil in good condition. The casks were covered with barnacles, and considerably decayed, showing that they had been in the water a long time, and all that remained of the iron hoops were the marks of rust. The Boston Advertiser thinks they came from the brig Hollander, of Boston, from Rotterdam, which was lost in Massachusetts Bay ten years ago.

The French have at last claimed the honor of being the first inventors of the locomotive, but such claims will not be easily admitted.

LITERARY NOTICES.

THE SOUTHERN LITERARY GAZETTE : Edited and published by our friend W. C. Richards, Esq., Charleston, S. C., is just entering upon its fourth Vo-lume. It is, unqualihedly, one of the best literary papers in our country, and we hope our southern friends will not forget that they have so good a paper among them. Terms \$2 per annum.

DICTIONARY OF MECHANICS AND ENGINE WORK. No. 23 of this able work, published by D. Appleton & Co., New York, contains articles on the Mechanic Powers, Mensuration, Metals and Alloys, Metallurgy, the Micrometer, and the Microscope.

"Leonard Normandale, or the Three Brathers," is a very ably written romance just from the press of H. Long & Brother, 43 Ann st.; 25 cts.



INVENTORS AND

MANUFACTURERS.

The Best Mechanical Paper IN THE WORLD! SIXTH VOLUME OF THE

SCIENTIFIC AMERICAN.

SITH VOLUME OF THE SCIENTIFIC AMERICAN. The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SixtH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the Sci-ENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the va-rious subjects discussed through its columns. It enjoys a more extensive and influential circula-tion than any other journal of its class in America. It is published weekly, as heretofore, in *Quar-to Form*, on fine paper, affording, at the vm-2 of the year, an *ILLUSTRATED ENCYCLOPEDIA*, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ORIGI-NAL ENGRAVINGS, described by letters of re-ference; besides a vast amount of practical informa-tion concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY, -in short, it embraces the entire range of the Arts and Sciences. It also possesses an ouginal feature not found in any other weekly journal in the country, viz., an *Oficial List of PATENT CLAIMS*, prepared ex-pressly for its columns at the Patent Office,-thus constituting it the "AMERICAN REPERTORY OF INVENTIONS." TERMS-\$2 a-year; \$1 for six months. All Letters must be Post Paid and directed to MUNN & CO.

RRMs-\$2 a-year ; \$1 for six months. MUNN & CO., Publishers of the Scientific American, 128 Fulton street, New York. INDUCEMENTS FOR CLUBBING. Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish-10 copies for 6 mos., \$8 15 copies for 12 mos., \$92 10 " 12" \$15 20" 12" \$20 Southern and Western Money taken at par for subscriptions; or Post Office Stamps taken at their full value. PREMIUM. fate. Now, despairing of getting cured, I re-turned home to endure it with patience and resignation. On the 18th of April, having in the meantime suffered severely, and with the prospect of a speedy death. I was pursuaded

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