Cutting Giass.-Take an old three-cornered file, heat it red hot and suddenly plunge it into a previously prepared mixture of salt and ice, stirring it about so as to cool as rapidly as possibly. Now grind the point on a stone preserving the three sides as much as possible, when it is ready for use. the three sides as much as possible, when it is ready for use.
The glass to be cut is nicked on the edges, then laid on a per The glass to be cut is nicked on the edges, then laid on a per-
fectly smooth surface, and the point of the file is, with a moderate pressure, drawn over its surface, the direction being guided by a rule. Such an instrument will be found serviseable for cutting glass for windows and all ordinary purposes. So says an exchange.
Cillorocarron, the new anaesthetic of Dr. Protheroo Smith, is a tetrachloride, or as it used to be called, bichloride of carbon. Although powerful and rapid in its effects, consciousness is rapidly restored after its use. Its vapor is very agreeable, having a delicate perfume not unlike that of a quince, and when inhaled imparts at first a sonsation of coolness to the throat similar to that experienced in drawing in one's breath after taking peppermint, followed by a feeling of warmth on the surface of the body generally. Drowsiness and other sensations similar, but in a less degree, to those experienced from chloroform follow.

Is Sweeden a Rising Nation?-Sir Charles Lyell, thirtytwo years ago, from an examination of some ancient sea marks on the Sweedish coast, concluded that the peninsular was rising at the rate of three feet a century. The Earl of Se birk, from a recent exar:ination of the same marks, comes to an opposite conclusion, which he has communicated to the Royal Geographical Society. The change in the position of the marks he attributes to fluctuations in the level of the water, and not to any upward movement of the land.
Carrier Pigeons lately traveled the distance between Brussels and Cologne, one hundred and ton miles, in from three to five hours. One lird flow thirty-seven miles, another twenty-two, and others twenty miles per hour. A pigeon race between birds owned in the former city, and others bolonging in Hamburg, is soon to tako place. The birds are to be thrown up in the Zoological gardens in Cologne and to fly thence to Hamburg, two hundred and thirty miles distant.
Beer versus Bread.-The amount of nutriment contained in beer is generally greatly over estimated. Liebig asserts that in 1,460 quarts of the best Bavarian heer, there is exactly the nourishment of an ordinasy two and a half pound loaf of bread. This beer is about on a par with our best American beer. Instead of being a condensation of the nutriment contained in the grain, in just so far as the liquid has under gone fermentation, the nourishment has disappeared.

The Niagara Subpengion Bridge.-Ever since the middle of March, 1805, from thirty to forty railway trains have passeđ over the Niagara Bridge daily. With the exception of the removal of the timber girders, and some other wooden parts which showed signs of decay, no part of the suspended system has ever beon disturbed. The work is considered just as strong this day as it was at the time when the first train of cars passed over.

Anotimer New Firer.-By a late patent, a species of nettlo, which grows lux riantly and spontaneously throughout the Mississippi valley, is employed in the manufacture of cord, rope, cloth, bagging and paper. The stalks, which grow from four to eight feet high, are gathered in the winter, and are ready for the brake without any rotting process. The fiber is said to be exceedingly fine, strong, and susceptible of a high finish by diessing.
Fish Biscoit.--Professor Rosing, of Asa, France, has invented a process of making flour from a species of sea fish, which he forms into buiscuit, thereby providing a very nutritious and compact article of food. These biscuit are four times as rich in albuminoid substances as beef, four and a half times as fresh codfish, and sixteen times as fresh milk.
Lectures at tiie Paris Exhibition.-The Imperial Conamissioners lave made arrangements for the delivery of a course of lectures, at various places within the buildings and grounds, on various subjects, such as caoutchouc, artificial ice, iron smelting, brass founding, and other kindred themes, connected with the mechanical and art displays in the Exposition.
an Inexilaustible Ice House.-A company has been formed in France for supplying towns in the southern provinces with ice from the sides of Savoy Alps. The glacier ice is loaded on vehicles at the foot of the mountains, transported to Geneva and thence by rail to its destination

We are indebted to Mr. H. T. Anthony, 501 Broadway, N. Y., for samples of Lithographic paper, from Paris, which we find excellent for printing photographic pictures. The keeping qualities of this paper render it convenient and valuable.
J. H. Hail, 102 Fourth Avenue New York, cured by his patent process; for one man in Cincinnati last year 11,000 dozen eggs. They were so well preserved that tho dealer sold them in February as fresh eggs.
Messrs. Notman \& Co., of Boston, Mass., have sent us some photographic cards which indicate excellent skill in portraiture.

## National Academy of Science.

This association held its semi-annular session in Hartford, Conn., during the past week. A report of their proceedings, which we had prepared, is clowded out of this issne by other Which we had prepared, is crowded
matter, but will appear next week

## Patent Report for 1867

We are glad to learn that the contract for engraving the diagrams for the Patent Report for 1867 has been awarded to Messrs. E. R. Jewett \& Co., Buffalo, N. Y., whose excellent work has for many yeavs adorned these important volumes. It appears that in the present caso Messrs. Jewett had no competitors; at least none who were willing to engage to produce work equal in quality to theirs at the same price. The engravings for the volumes for 1867 are to be finished loy July 1868, and then the work for the latter year will be loy July 1868, and then the work for the latter year will be
begun, this is quite again in time. Heretofore the publicabegun, this is quite again in time. Heretofore the publica-
tion of the reports has required about two years. The report for 1865 is not yet out.

## Distances from San Prancisco to New York

the central, pacific railiroad rodte.
The following complete table of distances and elevations of points on the Central Pacific Railroad of California, and other roads connecting therewith, between San Francisco and New York, is useful for reference.


## MANOFACTORING, LIINING, AND RAILROAD ITEMS.

Tile oldest inilis in Pennsylvania are in the quatint old town of Bothlehem Pa., built by the Moravians in 1793, and are now in good running order. A stationary engine of 500 horse power is betng built in Nowbargh, Cuyathe property of the Cleveland Rolling MII company who are erecting 1 m . mense Bessomer steel works in the former placc, The engine is horizontal non-condensing, 30 inches bore, and 60 -inch stroke. Two blowing cyllnders of 50 inches bore and 60 inch strokefuraish an air blast of from 20 to 24 pound per square incb, a pressure far beyond anything heretofore ued in the pro
duction of iron. The full capacity of the works when comple ed, will be frem 50 to 60 tuns of steel ingotsdally, or 12,000 tuns per annum.
Large importations trom Belgtum are annually made of rough plate glass, there being hitherto, 2 lack of suitable apparatus for manufacturing the ar-
ticle in this country A practical glass blower in Birmingbam, Pa., has invented an apparatus for making the rough plate and furnishes an articl Which is pronounced equal to the best imported.
The salt springs of New York produce nosrly
The ealt springs of New York produce noarly $7,000,000$ buehels of salt per
year. The wells: are owned and worked by the State, the water being pur year. The wells: are owned and worked by the State, the water belng pur
chased for evaporation by private parties, at a fixed rate per bushel of salt varying from one to twelve and a half cents per buehel. The net revenue to the State, from this source during twenty y ears, has been \$ $\$ 21,582$.
The work of changing the North Mlssourir rallroad from a broad to a nar low gage, for a distance of one hun
unribhed in four adye. Quick work.
The Viceroy of Egypt is sald to be the owner of more than one hundre team plows, We would Hks to get drawings of them for publication. Ransome's conc:etestone, is to be manufactured in this country by a joint
stock company of Baltimore. The process or making this artifcial stone is tock company of Baltimore. The process of making this artifcial stone is
imple enough. The sand or chalk is intimately mixed with its proper proportion of a solution of silicate of soda ; the plastic material is thea pressed tomolds or rolled into slabs, and afterwards immersed in a solution of chlor Ide of ealctum, when tie silica combines with the calcium forming insolubl silieate of lime, armly cementing the sand particles together, while at the ame time chloride of sodium, or common salt is producod, which is subs uently removed by washings.
The Montana people are congratulating themselves over the discovery of genuine sapphires in that territory. The precious stonesfound on E 1 Dorad
Dar, are familiarly known inthatlocality by thename or "Collin's diamonds" and are said to be quite plenty and easily procured,
The largeet dye-house in $\Delta$ merica is about to commenco operations in Pat erson, N. J. Its appofntments are on a very extensive scale and all its arrangements bave beca made under the direction of a French gentleman, fo many yearssuperintendent of the largest dye-house in Lyons,
that 1,000 or 1,200 pounds of silk can be turned autin one day.
An exoeedingly rich bed of oinnabarhas been disco vered about four mile elght feet thick, between walls of rock, which grows richer elght feet
A sudden reduction has bren made in the working force at the Springfeld Armory, in consequence of an
loaders to two hundred a day.
A train on the New York Central Rallroad ranfrom Spenocrport to Rocheser, a distance of 10 miles, the other night, in 9 minutcs.
The net profts of the Anglo-American Telegraph company for the eleven months ending on the frst ult., was moro than suffcient to meet the sums of \&125000 and 825,000 payable to the company as a frat charge upon the work
 the year, the sum of \&1a,889 Ds. 11d. is carried.forward to eredit of nest year's the year,
revenue.
Natural soap, it is again announced, has been discovered in Missouri some
Ixty miles from St. Louis. What has been really found, is probably " fuller earth "a variety of olay which from Its unctious touch might easily be mlo-

The Mount Cenis rallway is to be forty-eight miles long. The initial point on the French side is 2,493 feet, and the summit of the pass, 6,323 feet above sea level. For six milles before reaching the summit the ascent mnst bc on
an average gradient of 1 in 14. From this point to the Italian terminus of the road there is an uniform rradient of 1 in 12 Tuis atter sction of the road was expected to be epen for travel by the 1 1st nll . The French section of the road having suffered severely from fnundations last year will not be ready before September, by whlou time the entire road will be completed. The existing travel across Mount Cenis averages 220 passengers and 120 tuns of goods, daill. The time required is from nine to fourteen hours, but by
the railroadthe journey will be completed in less than flve hours. The largetiron work in the coutry arelocated 5 Jom The largest orks are and night and zive employment to 3,000 hands, Pa. The Steel bolle express engines, with steel boillers, are employed on one railway leacing out of Paris, ifteen on a nother, and several on cther roads.
The entire tankage capacity of Oll City, nearly 200,000
a waiting a rise in the river for transportation to Pi.tsburg.
The new bridge at Louisville, Ky., is to be 5,220 feet, or nearly one mille in length. The longest span will be 360 feet, thirty-six feet longerthan the longest span of the Montreal "Victoria briago." The lowest projecting point of the long span is ninety feet above low water, whle the highest rise ever kno
in the river was forty four feet, leaving a clear space of fifty two feet. The Anglo-Indian Telegraph company propose to build a direct telograph linc, via. Egypt and Aden, with subsequent extensions to Singapore, China.
Japan and Australia. The direct route from London to Sucz will, it is anticifated, befn actual work during the present year and the company have enteredinto a contract with responaible parties for la ying a thorouglily eff. cient line from Suez to Bombay. The entire line will ba completed next year, or atthe latest, in the May following.
it is found necessary on some railways having numerous short carves, to
have the flanges of the driving wheels of the ordinary 6. wheeled engines have the flanges of the driving wheels of the ordinary 0 wheeled engines
turned anew as often as everysix weeks. For the past three years, $84,000,000$ worth of boots and shoes lave been shipped annually from Worcester, Mass. This business gives employm

## qecent ©ucricau aud furcign zatents.



Latires.-S. L. Hart, Milwaukie, Wis.-This invention has for its obj cct to
furnish an improved device for attachment to lathes for the purpose of cup. furnish an improved device fol attachment to lathes for the purpose of cup-
ping the ends of wargon hubs, turning the interior of nollow wooden waro, ping the ends of wago.
and for similar uses.
Bos Sleigir.-G. O. Momeny, Locust Point, Ohio.-This invention has for its object to furnish a bob sleigh, or other slelgh or sled so constructed as to to be readily removed from the knees and runners for convenience n storage, making the sletgh limber, strong, and durable.
Ox Yoze.-W. A. Thompson, West Winsted, Conn.-This invention has for its objeat to so improve the construction of ox yolses as to diminish their weight and fncrease their strength and durabillty.
Beds ferad Facprivina--L. L. Jackson, Paterson, N. J.-This invention
nas for its object to furvish an improved bedistead fastening, simple in con has for its object to furuish an improved bedstead fastening, simple in con-
struction, reliable in ope:atlon and which will cnable the bedstead to be struction, reliable in operatlon and whic
easily and quickly set up and taken down.
SNAP Hooz.-W.S. Furlow, Geneseo, Ill.-This invention has forits obect to furnisian inp proved suaphook simple in construction, not liable to get out of order, not tlable to fre
manufactured at a small expense.
arrial Maching.-J. F. Elston, Elston Station, Mo.-This invention hias iorits ob ject to furnish an improved nachine for navigating the air so con-
structed and arrangeci as to be eomplctely under the centrol of the navigator.
Fountan Priv Holder.-J. S.Charlea, Omalia, Nebraska.-Thig fountain and relatively so constructed that the ink can be drawn to at one eand, and from the other discharged and expelled upoin the pen, attached or inscrted at from the 0
such cud.
Well Serid Bags.-A. D. Grifln, Meridith, Pa -This invention relates to a method for closing the bore of an oil, artesian, or other well, and thereby
stopping off the surface or other watcr, during the process of boring or working the said wells.
Ox Yoere-C. H. Post, Guilford, Conn.-This invention consists in attach lng a hinged motallic plate to the yoke, the end of which engage
bow in sucn a manner that the bow is securely fastened thereby
Oas Collars.--Jackson Robiuson, Curwherville, Pa.-This invention conists in supporting and noving the steering oar on metallic surfaces whereb the friction is greatly lessened, and the management of the steering or rudder eaelly managed than by the old method.
Radiators.-J. $\Lambda$. Marvin, Red Wing, Minn-This invention consists in orming the flue through which the products of combustion pa33, in such a manner that the heat trom the stove is compelled to travela lons distance and
be retarded in its courbe and radiated from the surfaco or the flues and the be retarded in it
casing utilized.
Watcirs.-Thos. Baker, New Yorls City.-This invention relates to that class of watcies, which are provided with an arrangement of mechanism, or stopping and setting free the second hand, or the
quarter, orany other fractional parts of a second
Compinid puriad and Bedstrad.-John Stark, El Paso, ill.-The present invention consists in so constructing a bureau, in su ch a manner, and in parts linged or hung together, that they can be opened from each other and
broughtinto a horizontal positionfor use as an ordtnary bedstegd, while at the same time, it so desired, they can be brought into an upright position and shut the one upon the other, forming a bureau, to all appearances, with the mattra
same.
SNar-Hooz.-M. F. Mitchell, Wauk au, Wis.-This snap-hook is so consiruc ed as
Lubricator.-R. P. Underwood, Brooklyn, N. Y.-This labricator is for the and spinning machinery.
Holder for Reing.-Phineas Jones, Newark, N.J.-The object of this 1 vention is to provide a simple device, whereby harness reins may be securely
held, and whereby they will effectually bo preventod from slipping out ofthe vention
held, and
hand.

Spring Ma trressis.- Heary H. Vere, New York City,-The object of thle avention is to so arrange and hold spiral springs in mattresses that the durarames now gene rally used inspring mattresses, that the matresscs may b casily hand led, and mpay be reversed and used on both gides.

## Calcolating Macine.-A. Mendenhell, Cerro Gordo

his invention consists in constructing a machine by witch figut The object of ired magnitude may be readily added, subtracted, multiplied and divided.
btop attachient for Requlatise ter Lengati of stitolitic Setwing Maninss.-George Robinson, Detroit, Mich.-This invention relates to ew and improved attachment for sewing machines, more especlally dc
agned for the Wheeler and Wilson machine, whereby the length of stitc may be regulatod or varied as desired, with far graater acouracy and facility
than by the ordjnary cam attachment now used for that purpose.

Brici Dryer.-John McDonald, Saratoga Springs, N. Y.-Thisinvention relates to an apparat:s in which the heat which is
further utilized for the purpose of drying the same.
Wator - Arthur Wadsworth, Newark, N.J.-This invention relates to that class of watches for the winding and setting of which no key is required, and in which both operations are performed by simply turning the pendant to
the watch case.
Revirsible Feed Michaniby for Sewing Maohings.-Rovert B. Stanton, Oxford, Ohio.-This inventioa relates to a new and improved feed ble of being reversed and feed the work either to the right or left on the
cloth place, whereby the removal of the work from the machine and the cloth place, whereby the removal of the work from the machine and the
turning of it around at the end of each seam or row of stitching, is avoided.

Gang Plow.-H. P.Staflord, Decatur, ill.-This inveution relates to a new and improved gang plow, and consists in a novel plan or mode of attaching the plow beams to the carriage, and also in a novel arrangement of the
beams, mode of connecting them together, and in a peculiar application of a lever for moving them laterally and vertically, whereby the driver or operator has full
plow obtained.
Knob Latcr.-George H.Palmer, New Bedford, Mass.-This invention re lates to a new and improved knob latch for doors, etc., and it consists in a
new and improved manner of attaching or connecting the latch to the hub of the door arbor, whereby the latch, in case ot the door being closed while catch thto orengatar is upon the kno b, may be forced back and made $t$ catch into or engag
were perfectly free.
anisal Trap.-Hermann Belmer, Cincinnati, Ohio.-This invention relate to a trap that is stamped or pressed of wire cloth with a wooden of
other bottcm, and which has but one entrance or opening. The door to th: opening is so constructed that a rat or other animal can easily open it from the outside, and so get into the trap, but when once in the trap it
most impossible for the captive to open the door from the inside.
Bale Tis.-L.Littlejohn, New York City.-This metal tie is for securing Iron hoops on cotton and other bales and packages, and it consists of a stir
rup yoke or bale, with an eye at one entl and a hook at the other, in the for mer of which a headed pin is hung that at it its other end is headed, and is engaged with the hook end to the yoke or bale.
Photographio Camera.-F.E. Wilke, Brooklyn, N. X,-This invention re lates to a new device by which photographio came
or inclined to any desired gage with great facility.
Fulminate for Nerdif Guns.-Buichner \&Ebertz,202 Greenwich st.,N. X City.-This fulminate is intended for needle suns which are provided with needie designed to pierce or penetrate hie fulminate. It is composed of chlo mucilageor gum in about equalproportions, the oflce of the gum being to bind the other ingredients tozether so that they may be formed into elongated, conical, or other shapes, to insert into the rear of the cartridge. The in ventors of tisis composition claim that it 18 certain fire, leaves no residuum and is not affected by moisture,
Roller Cotton Gin.-J. W. Kokemuller, Bluffon, S. C.-This invention is an improvement on the old roller cotton gin and is designed to obviate the
diffculty attending the springing of the rollers, a contingency due to the nec essary small diameter of the latter. This difficulty in connection with that of gearing the rollers so that they may be readily driven, renders the operatio of the old roller gin very slow; it performs its work perfectly though slowly, and has not as yet been superceeded by any gin for thorough work, although ther gins have operated more rapidy, but with more or less injury to th ock or fiber. This improve ing the fiber or stock. Lubrioator.-Exwin Faull, Maldon, $\Lambda$ astralia.-The invention has for it matter to the parts of machinery subject to friction and fort ins purpose 1 taneparcat materla, through which 1 place a supply cuckfor the purp sse of regulating the sup y having a nut at one extremity, for the purpose of permanenty adjusting esired for the purpose of cutting of the supply when needed, thus dispens $x$ with the necessity of closing and readjusting the first mentioned cock The coupling between the glass conduit pipe and the metal should be elas to allow for the
Hemmer for Sewing Machings,-James R. Haggerty, Hillsdale, Mich:nonsts in a hemmer having hinged edge turner
Bbice Macone
解 rollers operating with different degrees of speed, whereby a combine rollers very efticient.
Mold for Casting Lead.-S. E. Chuhbuck, Roxbury,Mass.-This inven lon consists in suspending the box or mold on pivots and applying gearing
o the same in such a manner that the box or mold with the plate it contains may be readily united and the plate discharged wih the greatest facillty.
Secretary bedstiad.-J. F. C. Plekhardt, New York City.-This inven tion relates to a new and improved bedstead of that class which admits a secretary or book oase, and when required for use, of being turned dow nd adjusted so as to serve equally as good apurposeasanordinary bedstead The invention consists in a peculiar construction and arrangement of parts
whereby the bedsteao is allowed to fold compactly within a case and still be fample size even when designed to be occupted ty two re commonly termed double bedsteads-and the case also besides beng or namental, or chaste and neat, is capable of being made of quite moderate pro portions not lerger than an ordinary low secretary with book-case on top.
Power for Sewing Machines.-L. Curdts, New York City.-Thisrelate to a new and useful adaptation of a clock arrangement, with a spring or weigh proved means for controlling the power, a substitute for the pendulum, an also in an improved sop mechanism, and a brake, whereby complete contro its speed being at the will of the operato
Mme Cooler--N. C. Burnap, Argosville, N. Y.-This invention relates th of the milk can to receive ioe or cold water. It is intended to be used while the milk is stralning which is thus cooled by the time the can ia filled.
Method of Hanaing Swords.- Virgilprice, New York City.-This inven tion consists in securing tiee plate by which the scabbard is fastened to the
belt, by means of a chain, so as to make a flezible attachment which does way with all the straps used to hang oflleers' swords; it being as simple a the frog att
Railhoad Switch - Joseph P. White, Savannah, Ga.-This invention lates to a new manner of arranging a self-setting rallroad switch, which is 8 o
crnstructed that the engineer on the locomotive can set the switch, while the train is moving at full speed so that it will euter the required track. Vrse.-J. C. Tate, New London, Conn.-The object of the invention is
Cotton Cultivator:-Jesse A dams, Clarksville, Texas.- In this Invention the hoes
Apparatus fon Extraotina Esprinorb,--James C. Walker, Waco Village Texas.- In thisinveation the extract is made under pressure, and bottled ro ma la saved.

Combined Plantrr and Coltivator.-Jesse Adams, Clarksville, Tezas. -The object of this invention is to produce a simple, practical, combined hall be cheap and durable
Railuroad Car Heaters.-W. G. Kendrick, Wilmington, Del.-This inven tion consists in a heating apparaus suspended under the center of a car floor, in combination with certain plpes opening into the outer air, and regis-
ters to receive the air entering through and under the car doors, for the pur pose of heating the same, and difoughing it wer hated through the car hereina.ter fully described.
Ship Vianetter.-Jamps C. Walker, Waco Village, Texas -In this inven thon a tube is attached to the hull of the vessel, at or below the water line Convenient polnt in the tube a whecl is placed so as to be rotated by the At a rent, and an indleator in some part of the ship, connected with the axle of the wheel, records the number of revolutions of the wheel, and in consequence the distance traversed by the ship in any given time.
Tailor's Measurina Instrument.-J.M. Krider,Madison,Va.-Theinstrumenthas an elastic metallic strip andstrap, which encircle the body under the arm pits. Upon the bar is a cross plece, which ranges vertically in tiont of the left arm; a movable stud slips upon the meta lic strip, and is adjustable There are four points of departure on the instrument thus arranged from which measures are made and noted ; and the instrument being detached and land upon the cloth, the distances obtained are laid down from the points departure as before, giving on
scribe and cut to fit the figure.

## Gusivers to Courespondents.



C.7 All reference to back numbers should be by volume ana page.
J. E., of N. Y.-You are right in supposing that steam is in visible. What is seen issuing from an exhaust, or above the surface o
boiling water, is spray, or water in a finely divided state. There is stean present in both of these cases but it cannot be seen. . . We understand that wood in seasoning contracts in every direction and hence that seasoned tenon driven int green wood will become loose as the gree
wood seasons.
. G., of Wis., would like to be informed how the column of air in front of a bullet can be practically exhausted, so as to secure the ad of metalliccartridges is the same as that used for caps, fulminate of mer of met
cury.
. S., of Idaho, destroys gophers by smoking them out. Ihe takes a length of stove pipe, places near one end of it a grating, and prothe nozzle of a hand bellows. He sets the pipe oal the gopher hole b anking it round with earth, puts rags and sulphur on the grating, sets them on nevertroubles any one blows wrs.
N. T., of Pa.-The substance used to give the crystalline ap pearance on the somewhat fashionable wedding note paper, is sugar of lead W. W
. denser and tougher. The reason is that the resto nous matter of the creosote
fills the pores of the wood, and cements the fibers more firmly togethe The unpleasantsmell of creosote, however, would render the process in K., of Mich.-Turbines belong to the Wheels and yield morc of the force of falling water than any other. kind of
water wheels. . . . Rubber cloth is suifable for small bell ws and in fact is much used for blowing apparatus. We suggest to you to examin the bellows of accordenns and melodenns.
. B. W., of N. H.-Most of the silver plating at present is done by the battery, and you will find that process quite suitable for you J. H. C., of N. Y.-The Lawrence Scientific School, (Har vard), Sheffeldscientific school (Yale), and the School ormines (Columbia)
and The Polytechnic, Troy, N. Y. are institutions of the highest grade, and or such equal merit, that convenience, expense etc., might be sufficient rea or sunsf forchoice between them.
R. G. C., of N. Y.-You need have no fear of the aerated bread on acsont of the consplcuous part which carhonic acid plays in it
manufacture. The pores of the bread contan some of the acid, but it presence is in no way harmful.
. E. F., of N. Y.-I think y.our reply to " W. J. B. of Mich," in No. 6 current volume was enormous; for since one cubic foos of wate
welghs 62.5 lbs., a column of water of one inch sectionalareq and one foot h gh would welgh 0.434 lbs ., and one of five square inch sectional area an four feet high would weigh 868 lbs , ins ead ${ }^{\circ} 42$ 60 lbs as y y ou state. . . Ou
intention was to give the weight of a column of water flve inches diamet and four feet high. We oopied from a manual for mechanics, mstead of making the calculation, or of dreating the inquirer to the professed au thority. Whether they are right or wrong can be easily ascertained by in vestigation. The fulltheoreticaleffect of five square inches of water unde four feet head is 0.25 horse power ; the practical effect will vary from 20 to
90 per cent according to the kind of wheel used. P. H . of Pa , wants the difference betwe
. H., of Pa., wants the difference between one square mil mile square and a square mile are identical ; there can beno argument this question. When you tals about two, three, four, or more square miles or miles square you change the subject entircly. These paltry aritb
metical, or rather lingual puzzles are unworthy the time bestowed upon metical, or rather lingual puzzles are unworthy the time bestowed upo them. Our time and that of our co
H. B. B., Jr., of Manchester, Eng., sends a diagram repre senting a pinion (driver) A, engaging with a gear wheel, on the shaft and asks if it is notnecessary that the pinion, A , and its wheel shall be strong in pitch and width or face as the pinion, $B$, and its wheel on the third shaft. We reply that the last wheel-on the third shaft-and the pinion which engages with it should be as much stronger as the last whee
moves slower than the first. Example: If A makes forty revolutions and the third wheel ten, then the third wheel should have four times the strength of A, because the stran on it is as four to one
C. S. W., of N. H. says:-"In your reply to 'R. S. S. of Ga.' in your issue of Aug. 10th referring to a pipe carrying wind from fan to
cupola you say that $\cdot$ whenelbows are used they should havefour times the sectional area of the straight pipe and asks.' Does this apply to wate pipes as attached to force pu mps for fire pu poses ?" The same law applic
to your pumps as to the fan blower, if your pump is centrifugal. The ande will impede the current of the water. If your pump is a cylinder and angle the obstruction will be the same, but it is then simply a question power to overcome the resistance and the strength of the pipes to sustain it H. W. H., of N. Y.-We know of no darker colored bronze J. M., of Mich.-We have as jet seen no official list of the lished.
C., of Miss., has a boilcr 40 inches diameter, 26 fect long, with two 15 -Inch files, chimney 24 feet high and 24 inches dam etcr. The the smoke under the boiler is from four to six inches high. The mill is located in a swamp and no good drart can be obtained. Ourcorcspondent holes in a cylinder. Reply. It you burn wood your grate is too near the
 fleient area, but if if has no pits it will choke. Your chimney should be at least t 40 feet high. The boilcr flues are suffcient for 18 feet ot grate sur-
face. The draftmay be further increased by turning the exhaust steam face. The draft may be further increased by turning the exhaust stean
into the smoke stacls. Run it into the stack, turn it up and reduce the ond perture of the pine to say cementrorclosing blow holes in steam cellinders. Your best way wonld
be to drill and tap in a plug with a cement of red and white lead and linseed oil.
J. S. McC.. of Ohio.-F. S. of Me., says that small cores for cast iron made of charcoal are very efiective. He has used them tirree-sis-

## Busimets and extomal.

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Pattern Letters and Figures to put on patterns for castings, G. M. Danforth \& Co., Inventors' Exchange, see advertisment New invention. A potato digger which putsthe potatoes in a bag and the 8 mall ones apart in a box. The original was made by a black-
smith at very litte cost, which will be saved by the work on three acres of
 Dctroit, Mich.
Wanted. A man to bore an artesian well. Address, J. C. Burruss, Carrollton, Green Co, Ill, Stating priee, etc.
Manufacturers of glass-ware for the use of chemists and drug rists, willplease send thecr address and e
office, Parish or Terrebonne, Loulsiana.
Lunsford, Woodbury, Ind., wishes an agency to sell new Rare chance. Patent rubber tips and fasteners for billiard cues, no chalk " miss oues "or torn cloth. Part or whole of right for sale
E. B. Stociling, Binghamton, N. Y.

## EXTENSION NOTICES.

Henry Watermau, of Hudson, N. Y., havin; petitioned for the extension o patent granted to kim the 15th $\alpha$ ay of November, 1853, and reissued the 9 th
ay of July, 1867, tor an improvement in safety valves for locomotive cil ines, for seven ycars from the expiration of said patent, which takes place on the 15th day of November, 1867 , itis ordered that the sald petition be heard the Patent Office on Monday, the 28th day of October next.
Laira s . White, admunistratrix of Jonathan White H., having pettioned for the of Jouathan White, deceased, of Antrim, N. H., having petitioned for the exte日sion ot a patent granted to the said uniting shovel blades to handle straps, for soven years from the expiration o said patent, which takes place on the 15th day of November, 1867 , it is crdered that the said pe
day of Octobar next.
Robert Sinclair, Jr., and Richard F. Maynar d, of Bal tmore, nd., having
Roter ovember, 1833 , for an improvement in feed rolle:s of stra $w$ cut seven years from the expiration of sald patent, which takes place on the 15 th day of November, 1867, it is ordered that the sald petition ve heard at the Patent Offce on Monday, the 2sth day of October nest.
William B. Bates, adininistrator of the estan of Mansfid tiesald George Wellman the 6 the flay of December, 183s, and relssued the th day of July, 1867, for an improvement in strippiug top fats for condin machines, for seven years from the expiration of said patcit.t, which taike
place on the Cth day of December, 1867 , it is ordered that the said petition be eard at the Fatent Ulice on Mondas, the 11th ay of Novembcr next,
William B. Bates, administrator of the estate of George Vellman mansidd
 ay of Noveinber, 18503 , and relisuued the $30 t h$ day of July, 1867 , for an in provement in stripping top liats in carding mach the expiration of said patent, which takes place on the 2jith dav of November 66i, it is ordered that the said petition be heaxd at the Patent Onice on Mondat, it is ordered that the said petici

## NEW PUBLICATIONS.

A Narrative of the Campaion in tie Sienandoaf Val LEX in 1861, by Robert Patterson, late Major General of bell. persions cast upon him for his management of the forces under his comman the time of the tirst Bull Run battle, bas added a very inp, rtant ehapre mony, with just sufflcient narrative by the author to give $c$ herency ande $n$. nuity to the account. A very accurate plan of the country cove-ed hy the perations of the first campaign of the war accompanies the volume. Gen. atterson is one of the wealthiest and most extensive manufacturers in ennsylvaniz.
A Popular Treatise on Gems in Reference to their Scientific Value: A Guide for the Teacher of the
Natural Sciences, the Lapidary Jeweler and Anater Natural Sciences, the Lapidary, Jeweler, and Amateur
By Dr. L. Feuchtwanger. Third Edition. Published by By Ar. L. Feuchtwanger. Third Edition.
This edition of Dr Feuchtwanger's valuable work is greatiy improved by the addition of an Appendix containing a chronological list of works on gems
nd miner.ts sin ee che fifteenth century, a table of the claracteristics of gems, and the present value of diamonds, orecious stones, corals, and pearls. It has also a very life-like engraving of the author and a scries of colored
lates representing most of the precious stones and ornamental minerals. The treatise is flled with interesting facts.
Ned Nevins, the Newsboy. By Henry Morgan. Fifteenth Thousand. Illustrated. Boston: Lee \& Shepurd. This is the story of a Boston newsboy wh se check cred career unay be a copy
of many others. The p pularity of tne story is safficienuly attested in the Elements of Chemigtrp, Theoretical and Practical
By William Allen Miller, M. D., LL. D., etc. Part I Inorganic Chemistry. F
Additions. New York: John Wiley, 535 Broadway pp. 805. Price 87.50.
Dr. Miller in this editlon of his Chemistry adopts the atomic notation, and presents the most recent views of the leaders of the soience. The republica
tion of this great work at the present time is very opportune for America students We have weded fust such athettc and reliabe versina modern chemistry. It is the only large treatise extant which fully and fairly can meet the needs of American science. We uuderstand the third and ninal volume, on Organic Chemistry, whll be paillished in September.

