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atness in the West. Will purchase the right of some goo arttcle, or admitt a partner. S. \& Co., Box 1182, Fort
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Th. Alberti, 22 EIdridge st., New York. Best References given.
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Automatic Wire Rope R.
Ore, \&c.. without Trestle Work. No. 34 Dey street, N.Y A. F. Haveny Lights Towns, Factories, Ho-
tels, and Dwellings with Gas. ${ }^{4} 4$ Dey street, New York. Bert Philadelphia Oak Belting and Monitor
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Cad be put in operation by any lad. Includes battery. sey and wires. Neatly packed and sent to all parts of the world on receapt of price. F. C. Beach \& Co., 263
Broadway. New York. Millsinne Dressing Diamond Machines-
stmple, effective, economical and durable, glving untStrmple, effective, economical and durable, giving unt-
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logue and samples free. E. M. Douglase " brat leboro Buy Boult's Paneling, Moulding, and Dove
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Blise $\&$ Willame, cor.of P Plymouth \& Jay, Brooklyn,N.Y Protect your Buildings-Fire and Water.
proot! Onc coat of Gllnes' siate palit is equal to fout




## 82nct

A. G. says: I have a small sectional steam thlck. It 18 made in the best manner, of good tron thorouphly soldered and rivetel. How much pressure
to the square tnch will it stand? How large a cyllnder can I make for my englene, to run 200 revolutiong a min. large a balance wheel should I have? A. The boller Will rafely sustann a prestare of 401 lbs . per square inch,
if well bullt. Calculate the nummer of square feet of eatingsurface that it contains, and allow 15square fe
for a horse power in the enkine. You can then prop or a horse power in the enklne. You can then propor
ton your engine accordingly, by ru'es that we. hav requently given in former answers,
J. B. asks: What is considered a good rebustion escape into the stack? A. With natural dratt,
he gases stould leave the boller with atout the perature of the steam. Your other fuestions can only e properly answered by a manufacturer.
T. J. M. asks: 1. Where is the greatest
preasure on a boller? If take a barrel and fil it with water, and then put in several pounds of gold in the bottom, and attach a plpe to the top of the barrel, and
runtt up fiften feet to the bottom of a reservorf full of water, where would the greatest pressure be? A.
On the bottom in each case, that is, if we have the cor-
M. F. K. asks: Will it take any more pickgo across the base of the same mountain? Tbepleckets dicular over the mountain. A. No.
W. A. W. asks: 1. How, when, and where
did the Aprll fool custom originate? A. There are many different opinitons on this subject, the most com Hindoos. 2. Can you tell who was the first black man, andwhere he lived? Was it the climate that mace hilm
black, or was the color natural? A. We expect that no
W. J. R.T. asks: 1. Is it known to be true
that themoon has no influence upon the tldes of our that themoon has no influence upon the tides of our
globe? A. No. 2. Has it any on the vegetable king. globe? A. No. 2. Has it any on the vegctable king.
dom, ortnany other respect? A. Not directly. S. If
the former ts correct, what then causes the tide in the Bay of Fundy to rise to such a great hight? Is the Gulf Stream the reason of tt ,by expansion by heat? A. It is
on account of the furm of the coast. 4. It would shorten the seaway coustderably to certaln ports of the Pacifc
Ocean if the Isthmus of Panama were cut through whi Ocesn if the Isthmus of Panama were cut throukh ; why
has th1s not yet been done? A. There are many in faver of such action, but, so far, the necessary capital has
W. N. J.-Lava in cooling absorbs water
The mood has a very attenuated atmosphere. The ten
C. B.'L. asks: l. Are aniline colors poison-
ous in any was? A. Anlline ts poisonous, but tits salts re generally considered harmless. 2. I saw in your pa
 or harmful. when applled to cuts, etc., as described th ton, we have repeatedly given rules on the subject, D. M. M. asks: Can you explain to me the
princtples and workings of the hydraullc jack? Can I construct a small one? A. It works on essentlally the sameprinalpe as the hydraulic pres. By addressing
manufacturers you can obtain illustrated circulars, exlaintng the construction. You can construc.
you do not employ any of the patented detalls.
C. W. W. says I am constructing a small square, and perpendicular to the surface of the water
that ts, Itke the end of a drygoods box, will the helm act or will it be powerless unless a portion of theunder par
of the boat's stern 1 s cutaway? A. For an ordinary rudder, you must cut away so that the water can get a
It. But tf you are very desirous of bullding the square stern, you can steer with a rudder placed like an oar,
E. W. R. says: 1. I am tending three en-
gines. One 18 an 85 horse power, of which the slidevalve is beginning to wear. Is this the fault of the engineer,
or is it incldent to all englnes wblch are in cons ant ine? A. It 18 not necor construction. 2. In Bourne' Catechism of the Steam Enfine" he says that one cu Dic foot of steam at a given pressure would just indi.
cate one half the pressure if the space should be doubled. has threegages of water. Iet the fre go out under of them, and blow off the steam. The other 8 have 60 bs. pressure. I open the connectiog valve, allow the
steam to gain the same pressure in each bet, and the if so, please explain. A. Bourne's rule is approximate y correct. As we understand your mode of making the experiment, three of the boilers are forming gteam al
the time, having ire in them, and the otherthree also perature than that due tna pressure of 48 ibs. per square
inch. 3. Comstock's "Philosophy " says that if you stand a pork barrel on end, insert a 2 luch plpe 50 fee high, and flll it with water, it would break the barrel.
He saida \& inch plpe wovld do it just as quickly as a 12
inch plpe. Is he right? A. Yes.
 Tit aireor's compass at times rise and adere to Aisurrance, and at times to the thatuence of of ocal at. to polnt out the true cause of this occasticnal phenome-
non. I have known surveyors to be greatly puzzled by It. It has happened often to my own experience, and ts hue to.frictional electricity, produced by rubbing the
hand over the glase. It occurs only in dry, cola weather, when there is intile motsture in the air and none on
the fingers. At sncl a time, slould the surveyor to the the fingers. At snch a time, should the нurveyor to the
woods find any small leaf, plece of a twig, or bark from woods find any smallleaf, plece of a $t w 1 g$, or bark from
a tree, fall upon h1s glass near the point of the needle, be brushes it away. The friction of his hand developes electricity, and he fs surprised to and the needle glued
fast to the glass, where it will remain for a long time un fast to the glass, where to will remain for a long time uth.
lees he happens to know the cause and the remedy of the less he happens to know the cause and the remedy of the
trouble. The glass must at once be molatened; and if there is no water at hand, he should spit upon it and
rub bit all around with the finger, whereupon the needle will be instantly rellered. I have often intentionally electritled my glass in this way for the amusement of
the curtous. So far as my expertence teaches, this is the only cause of the phenomenon, and $\mathbf{G}$. F. S. S. or any thersurveyorcan prove the correctness of the soln
tion on any day when the required conditions exist, by
R. asks: What amount of coal is used in $\because 4$ verpool trade in ordinary weather? A. It varies from 20 to 60 tuns a day according to the size of the
and the power and construction of the engines
R. L. M. asks: With what force does feet? What int the rule for flodtug the force that dif
foll A. of the welght, whitch tis found by multiplyting the weight inpoundsby the velority in feet per second, and divit ing by 322

1. W. B. asks: How are tables of logar-
itm; calculated, with 10 as the base of the syatery? For instance, log. $2=0.801030$. By what calculation is th such calculations are made is the development into a
sertes, by means of the binomial theorem. It would oc cupy too much space to glve a full explanation in the columns. You will fid the matter fully expla
Law's " Treatise on Logarthms,"Weale's sertes.
D. G. asks: Is there any moans by which belng used for heating purposes? Is it possithe to do it ?
A. Yes. In the manufacture of gas from coal, thecoal emaining after thegaa has bo is used to heat the gas retorts; and the remainderis
sold in market as fuel. The gas companies here sell
E. W. S. says, in reference to the " blowing up" "question: "If the person lying down does not in
hale all he can, and hold his breatb, and the lifters do oot both inhale and exhale (no matter if they do work
ogether) it 1 s impossiole to ratse him without stratning he fingers while lifting: so it is not imagination tha prevents the lifters f om feeling the weigl.t. If pozal-
ole, please tell me why we can raise a person by
the above weans, and by those means only? A. So far our experlence, goes, we see no reason to modify our revious answer, belleving that the princlpal benefit
he noflation 18 to make all the lifters act together. J. F. asks: 1. Does the outside of a belt run whenan engine ts on the up or down center, the plston Whot exactly in the middle of the cylinder. I say it
1s nus
mus to nust be in the middle of the cylinder when it to on the
up or down center. Wbteh 18 right ? A. Your frtend. ap or down center. Wbich 18 right? A. Your friend.
. Is the Sceience Record printed every year? A. Yes.
As to youreugine and bofler question, you do not send
B. B. B. asks : 1 . How large a pipe is needed
give fuil fow of water through twenty $*$ nch fau cets, from a tank 40 feet above the place supplifd, all
the faucets to be on the one plpe? A. It should have an area at lesst at great as the sum of the areas of the
separate faucets. 2. What would be the pressure per squarelnch at bottom of sald plpe? Is therea work on th1s subject that will answer all such questions? A.
Divide the hight tu feet by $2 \cdot s$, which will give, approxiDivide the hight in feet by $2 \cdot 9$, whtch will give, approx
mately, the pressure on the base in pounds per square inch. 3. Is there a work that treats on steam plptng aud heating oy gteam? A. We do not know of any
worksthat will giveyou prectsely the information you Want. We can, however, recommend Traut wetn's "En. Fincer's Pocket Book," and
Ventllation and WarmIng."
W. H. S. asks: What is a sill level with with the horizon, or the line between sea and sty. W. T. asks: 1 . Is the process of zincopatented in the United States? A. No. With a borlng bar (not having a sllding head) on a allde iathe, sald cylinder betng bolted to the carrisge and fed
by tt , when the boring bar to not in line with the lathe shears? I contend thatt can be done only when the barand sheark are parallel. H bored when thebar is
not in line, the cyllinder masy be straight but cannot be round. A. A cyllinderbored by a bar cut of true with
the lathe shears will be true whether the cvilnder feeds to the bar head or not, the only result of the bar betng
out of true ts that the cylinder will be thinner at oppo. out of trus is that the cyllider will be thinner at oppo-
site ends on opposite sides; the bore will not be true Ith the outside of the cylinder but true of itself, ne
H. W. S. says: We have a boiler carrying
in Aze, connected, would 55 lbs. pressure on each botler do culate the hourse power of an engine under such car. cumstances? A. It would not, under ordnary clrcum.
stances, with the same englne. We have frequently given rules for calculating the horse power of an en-
R. Z. J. asks: What kinds of lenses are used there of them? What are their focal distances, and ow must they be set in the tube? A. Any double con
vex lene will 10 . Its size, focal distance, etc., depend upon the desiredmagnitude of the pleture to be thrown seen by inspecting any photographer's camera. The toy stores,
8 s to 810.
A. B. C. Says: I Iam unable to und erstand
the worktig of the parailel mot mon that trated in your

 he engraving, I Ind that, as D $A 18$ about three thes
the length of DB, B can never arrive at $A$, as men. thoned in your remarks. and that B can only perform
about 1.6 of a circle asout $J$. There is evidently some. thing about it whith I do pot understand. Will you
the revolve about answers in correspondents bow B can nected from D and $E$ ? A. The circles were drawn for
the sake of the explanation, and not to indteate that $B$ the sake of the explanation, and not to inntcate that $B$ made a complete revolutlon. That a clrcle can be
changed into a stratght liue is manifesily tmpossible
with Whth the device. Its obiect is simpls to do perfectly that which Watt's and other lise mechanism dots im.
perfectly, that ts. to convert curvilinear motion into S. K. asks: 1. What is the new parallel ectilnear motion, orvice versa. In any machime sutto. ble moditications befng made in its form to sult vars lug
circumstances. 2 Is the walking beam still used on teamboats? A. Yes. 3. How is the parallel motion arious plansansitted to the beam? A. There ar ect.
E. W. B. E. W. B. asks: How shall I make a sand
whcel for wood? What kind of sand shall I use, and how shall Ifasten it on? A. Make an ordinary wood then cos tit with glue (about a foot at a time), and cover It with sifted white sand (eea saud will do) wille the Tle leather may be recoated osten as necessury. G. C. U. asks: 1. If the equatorial diame
ter of the earth 185 s miles more than the polar disme er, wh isit that the Migel8sippl runs toward the equa
or? or? A. Becsuse the source is furthcr from the center
of the earth's gravity than the mouth. 2. What is use to petrify human bodies? A. See p. 22, vol. 29. 3. Can
you give me a rectip for sticking paper togethur? A. d the order of Free masonry, and in what year? A.
Theorigin of the order is tooanctent to be defintely
L. B.-This coue pendulum is a heavy ball bitsof watch spring, of which two are at right angles co the others; so that the ball may swing in a circle. The tromagnet, so that the pendulum must rotate once in
two seconds.
$\underset{\text { englue with a cyilinder } 2 \text { Incbes in diameter x } 2 \text { a in inches }}{\text { W.F. M. sacs }}$
 hat size and welghtshould the tiy whcelbe? Areporth प्र $x$ 3y inch too large for such an englue? A. It will be
suffletent to make it of such a size that it seems to be well proportioned to the rest of the marhine. The
team pressure and size of ports will probably auswer ery well. 2. Is the 1 valve used in locomotives? A.
No 3. Can a perfect cut-0f be obtaned at any foint With link motion, by baving a cut-of liver?' A. No. \&.
Would you have given a different aoswer to my previus questions, concerolng steam engine eccentrice, had
sald "belng link motion engines in both cases? A. No W. H. B. asks: To what depth should I sink
an artestan well after coming to water, so that the wa. ter will flow out at the top? If I strike water at 40 feet nd have 8 feet of waterin the well,howdeep should the
well be? A. No general rule can be given on the sub-
G. J. L. says : I am building a small steam
re engine. I liave the workingpart done, and it works moothly andfast unt1l water 18 turned on to the pump,
hen it draws the water until the water cylinder is full, then t draws the water unt11 the water cyllnder 18 full,
and then stops. Thistrlal was with a block tin boller,
 and 1y inches stroke; both have silde ralves allke; it it
upright, about 9 inches high, turnin? a balance wheel uright, about 9 tnches high, turnin? a balance wheel
inches in diameter. The steam cyl oderis at the top. nches in diameter. The steam cyl oderisat the top.
it poselble for me to get it $t_{n}$ th ow water at all
 team? What pressure of steam wuuld runit? Would
boller and furnace combined, 14 tocnes hifh and 8 Inches, le aues. The total heatling surfact of the boller (not including the top, which would have conslderable beat
on it, on account of all the beat and smoverol,ectiog Thls to get to the smoke stack) This is the largest size of boller I can put to it. A. We
ueject that the trouble arises from improper adjuetment of thewster valve. The present boller is very
small, and so ts the oue that you propose. Still, you throw some water
F. J. says: I wish to suggest a change of
manufacture of low pressure engines. of water from the tender on the cyllnder from which
he steam lstransferred to the condenser. This w111 d1mintsh reststance, and the steam will be condensed with
mess water, which has to $r e$ pumped againgt the atmo. spericpressure. Hor izontal cylinders would not te un
equally heated.and theheat of the outalde of cyllinder绪 tract. The beat of the piston would adiate, diminitil)-
ing a llabillty to cleave to the cylinder and reducling fritction. A. This would be gotng back to old practice.
It 18 desirable to prevent, as much as posible, all con-
M. D. says: I have a vat of 300 gallons of
iquid whichi wieh to seed below $70^{\circ}$ Fah. Having a clstern 6 feet gquare with 3 feet of water, I propose to
hulld a vat of 150 allons capacity, running a pire from hill
the vat into tht cistern, using between 200 apd $30 C$ feet of $\%$ plpe for cooler, runniog the water from the 150
gallons vat through the plpe, back in under the 300 galgalions vat through the plpe, back in under the 800 gal-
lon vat. I can fix a pump to raise this 150 gallons of water, and runit through the plpes, usting 2,coo foot 108. to
furntsh a continuous stream. 2. We thlnk that th1s furnish a continuous stream. 2. We think
proposedarrangement will answer very well.
J. A. S. asks: What is the best process for
ending timber?
I have a steam chest which I uee, but cannot accomplish a eatiffactory iob. I often see the
most fragtle wood which bas heen bcnt without the
least cracle. I hose handles, wagou tongues, etc. A. It 1s done by eecnrlng
the piece to be bent to a timillate, and bendir it ittle the piece to be bent to a tifililate. and be ndire it Ittitle
ty iltle, aftersuccesivesteamings, if necessary.

D．S．H asks： 1 ．What fraction of a horse
power will au average man expert by wutkiga
treadle？
 sot poundefar 4 or 5 hours．Does this mean
 nake the tace of the pulle as amooth as posestie．
F．M．gays．A friend of mine，in speak ing这
 form a couple，ench moving with a force tin the tiveras ratto of mase and distance round their common eenter
of gravity．Whereas，in our solar astem，there are many bodies，he moving force of each is one of a
couple，the ether beting the mase of the primary on the oppusite elle of the center of gravitt；there betng， however，a common center for the system asa mhole．
Is this a correct representation？A．Yee，unbetantally． J．W．C．asks：How can I stick the bottom the goblet will make a atandard for the globe，and the

J．C．W．ARks：Can salt be used more than
one in waking ice cream，or doess contuct with the ict chemically（hanga it tato a different article from chlor．
tee of sodum Ide of Bodium？A．It 18 not cra a ged．Thi
recovered by evaporation and used again．
J．D．L．Asks：With Mr．Ericgson＇s floating the eid eof it，would it not draw the ball over to that F．M．F．asks： 1. Can you give me a recipe
that will prestre a minow， to he used for bate？A．Try dipping it into gly certu．
3．Will mineral water keep if caretully gealed？A．Yes． L．M．siks：Is there a material，a good non－
conductor of neat，that 18 eutitable for coverng glass blowers＇tools？ $\boldsymbol{l}$ A．Po
lar to that mentioned．
J．E．L．asks：1．What will be the best
metiod tor retioma soider？A．Re－melting． 2 ．what

B．W．S．asks：1．Is the atmosphere heavier
or lighter on a cloudg，ramp day？A．The latter．2．，Why is that smoke arises so much more slowly on a camp day？A Because the weikh of the column of air ${ }^{18}$ equal to or greater than the welght of an equal bulk

J．A．H．．．ays．An an anost insuperable ob－
jection to the use，in Southern watere，or team bargee by parties tor therr private use nd pleasure to the re
ditiring．by Rovernment offlctale，of the employment of censelengl eers and plot．is there sucha 1 law？ so，whydoestit not apply equally to Nem York as to to
Geoorgia and Fiorda？A．If the boat tis ueed by the
 engernere．But if pasengera are carrited，or the bast 1 ie
let to other partles，tne case comes under the United tatee law．

 parts water with 5 or 6 caustic soda，and rinee in freet mater．Thun 8 teep for half a minute in a plekle of 1
part sulphurtc acld in 10 water．and ringe with bollina

 posti tis black und dull，seratch－bruab $1 t$ ，and dip agati
 toluring it？A．When we know the character of the
medictue，a recipe can be given for removing the stain medictue，a rectipe can be glven for removing the etaln
which it makes，put no Reeeral rectpe can be given tor 11 medicine $\begin{gathered}\text { talans } \\ \text { ．}\end{gathered}$
H．A．B．asks：How can I soften finished
 Fith clay，and nuek arouod the work thavings and turn－ Ings of the eame metal as the work teelf let the bo．be
kept tin furnace suflicent time to heat the work to a tiall red，when the furnace fre may be allowed to ${ }^{\text {go }}$
out and hence the box to cool gradually $:$ or otherwhe，
 F．C．B．ABEs：：How large should the
core of \＆o induction or Raumkorit coll be to produce the bet effect？The coll 18 to bes incheatn diameter．
A．See p．s79．vol． 30 ．What 18 a commutator？ A ．

 Till depends upon the orize and quallty of wire used，
alion upon the construction of the coll． A．asks ：Please give me a method of mix．
tag walinu graining color in oll，po as to allow pencll－
 shade bentod the penclltog．A．Ground for granning
are made of white lead colored to sult the specal pur ${ }^{\text {arose．}}$

 is ftror use．
H．W．D．asks：What is good for a pain in
the lower part of the back？I nave a friend who has

 nerves appear to be affected．Would not electricty
tend to trritate and exctte the nervea？ under the direction of a physiclan skilled in these ma J．S．asts：How can I bend glass tubing？ time，th the fame of an ordinary gas burner．It should
be held in the aame direction as and not across the

 10 teet higher than my outlet．The matn plpe runs uu
and into the reservorr in $m$ g kttchen，and makes out and downward and goes on to my nelghbors below in the bend to the pipe a emall hole 18 made from which
recelve my share of water．In order to have the wa er run out of the hole，I put in a atralght compresion
cock，in the p ple leade ock，to the plpe leadthg from the tub：and closing aid
cock would back up the water and make tit run aia Ared for r fem das y，then sediments of some ktnd woul collect and partally stop up the hole tin the cock withen would get more than my share of water．The wate In the epring 18 clear，and there 18 a good copper etraln
er at the sping．Can $I$ make a filter of oome slind to put in at the epring．Which would be better than a strain
er，to prevent forelgn matter in the plpe ？A．Probably

T．M．J．asks：1．Water is composed of be separated？A．Yes，by the galvantc current．2．Are
Bngerdrinks in in aken Immoderatel
G．B．S．asks：In your answer to L．E．R． or a polith for malnut，You pay：＂Melt 3 or 4 ipeeee
ondarac or the il and 1 dram Venice turpentine，＂etc．You muat use omethng else besldes sandarac，as it will not melt in
Ii．You can disaolve it in alicohol or turpentine，but It will all curdle up as Boon as it it mixed with the oil
A．Melt your gum separately，and then mix with boil aghot onl．
P．S．asks：1．Will it do to run lightning

 ill drawn together and down one rod to the clatern A．There would be nothng gatined by multiplyiog the potnt in the way you speak of．The
oodeconsitat manly in thetr stoutness．
P．gays：I have a piece of machinery with
polished iron shatts．It tetand in a damp place．what varish will ellectually prevent rust，without injuring he poilished surface？A．It will be your best plan to
 or need an intenatty or a quantity battery，and how is each mode with a Bunsen bat tery？A．Connect you
inc of one cell with our copper or platinum of the second cell．2．In what proportion ehould I mix sul． hurrc actla and water for a

 auantty to supply the large demand for tit or foundry aciug．polish．ec
last mavy years．
F．E．W．says：Some $\operatorname{lime}$ sgo I noticed nkmarks？Your ansu cr was，think，that youkne of nothng．I have juat come across the following Rub well with a ealive of pure acette acld and lard，the
Fitha aolutlon of pot acld．Sometimes these marks may be obilterated by bilatering the skln and keeping the blitater open for minle．When the new skin grows the marks will hav
disappeared．A．Theee remediles are a good deal worse than the Inctan Int statade．
ute removal of the kind
R．F．L．．asks： 1 ．What preparation can I
apply to large wooden triction wheele to prevent ailver ing up on he face？A．There s $\frac{1}{}$ no effective method preventing the silverting of large wooden friction
wheels． 2 ．What kind of paper tis used for small fric tion wheel，and howis it ued？ 18 it clamped bet ween
Aangee，with or without glue，or to
tit put on in layers angee，with or without glue，or is it put on in layer
with glue？A．Paper friction wheels are of thick bro aper，put together in layers withont glue，under hy
 In any part of the world，as clocke require longer or
shorter rode according to localty？A．We euppose you efer to the leugth of the seconds pendulum．It le lengt in feet $8 \cdot 8 \cdot 26058-0 \cdot 008818 \times$ the cosine of twife the lati
tude of the place．
Having found the lenzth of the that
ond pendulum，that of any other can r radilly be calcu Iated by observiog that the vibrations made by two pe dulums， tna glven timm
roots of thelr leng ths．
S．R．L．asks ：What sized boiler shall I use
 probablepower from the proposed speed and presure，
and allow from 15 to 20 oquare feet of heattng surface and 2110 from 15 to 20 aquare feet of heatung surface
per horse power．Make a \＆y wheel from 12 to 15 tnches diameter，weikhiggirom 50 to 60 ibs．
F．H．asks：I am using a powder，for weld caustic soda and borax．What does caustce boda add to the weldng propertles of the powder？It tis very bad
or the health of those using it；and if you could tufor me of some fux that $I$ could use for welding ateel rall a veryhtgheat，to keep them from cracklng， 1 wou
be thanktul．A．There are several patent compound in the market，but we know wery little in regard to the mertia．If you Insert a nottce in our＂Buatnees and
Perronal＂column，you will probably hear from the manufacturers．
A．A．W．says：I am running a pair of 18 there beany difference in power if each engine bad a
 deal upon the tize and arrangement of plpe．It proper
 cent detalls．
G．A．N．asks：Willa boiler 104 inches di－

 71 nchee 8 troke？What presure would auch a bo
arry with aatery？A．The boller thather emall
W．H．S．gays ：In an argument on cannon no
orld weremade in England．This the American would


 molstened with urine or oll of turpentine．
E．W．eapy that W．E．M．can bleach tallow
without injuing It，as foliow：Heat the tallow to 1200 ，
 keep it hot at least 50 minutes，then dash mater into it．
and atew the water and tallow for a few moments．If Correctly done，the tallow will be tid emall lumpa like
hot，or buter when it trat comea in the churn Skis shot，or butter when it irgt comes in toe churn．Skim
he tallow and melt th again，remove all the mater and
 stne cyltnder：but for launchioga anp，the tallow mual
 Fin not allp like bect tallow．Tallow can be tatio
 lug it ；but tt will not slip after that，but will dry like Inseed onl．For rriction，use beef tallow readered be
fore decas commences，with but Ittle bollling；for belt and the like，mutton tallow 1 B beat．For paint or ma it will not ellip．
J．H．J．Jays，on the subject of draining a
 ngtn below the wall．In auch a case the cellar wall
nhould be bullt on a trench flled with broken stone，
 round．My malls not having been bo bullt．I proceed
d thus：I made a allght trench at the tnner foot of th outer wall， 8 as to catch the dratnage，Which Was a
rought to the tront and carrted under the wall．At ine made an outidide draln，ave feet deep to one foot deep n which I latd a brick dratn（brick on edge eovered
with cross brick）and reflled the trench．This was 35 years ano．Occastonally I am told that mater 18 siand．
ingin the cellarfloor．By way of inetruction I takem nformant to the outtallo of the covered dran，takem my cane，removea few leavee whlch had gathered upo the opening，and forthwith a bright atream of water dralns，I dag a well tn one of my cellars to the grave eed below（ 12 feet）walled it with bricks and covered it securcly．Into th19 well are made dratna， $10 \times 12$ Inches
niled with broken atone and covered
mith earth， keep every apartment dry．In Inve no need of cement
and prefer the dry clay．Bedi oo golld clay have dran ago seams in them，which would not be sugpested．
lany years ago I purchased a lot adjotnag my own rounds；this lot had on it a 8mail brick house，under he family occupying the tern．Withnu my own ground I made a large cave covered with loge and earth，for storipg vege etables tin
FInter．At times the bottom of the cave would be al． Whitr．At imee the bottom of the creve would be al． ravel．The remedy was complete，and atter that the gravel ．hie remedy was complete，and after that the
cellar pooken of，distant alxyy teet from the well，was

Mnerrals，etc．－Specimens have been re ceived from the following correspondents，and examined with the results stated
W．S．V．－No． 28 does not contain tellurlum．It con tains silver，copper，arsenic，and antlmony，and the
green color tid due to the second and fourth of these substances．No． 26 1a a varlety of the rare mineral or het of herpentine of unuaual harduees and high ppectic
ent fravity（274），and 18 probably to be referred near the


 quantity）．It will not burn to a sone when kept
white heat for 10 minutes．What was done to it burn to a stone？

S．C．H says：I have a drawing in Indian较 KInd of paste and varnith should be ueed＂－w．C．aaya
 the fuicrum，the power，and the welght，reeppectively I think that the axle bearing are the fulcra，the prese．
ore of steam tn the cyllider the oo wer，and the locomo． tive the melght．［Th1s general 1dea 18 correct，but some modifications are required．Perbaps ove of our read rrs will point them out．－EDb．J－J．A．asks：What tis th ing to otop water in rock boring？The bore of the pre ent hole $185 \times$ tinches dlameter and te0 feet drep ；we ar zong to bore 500 feet more or $2 \%$ Inches dameter． －$W$ 2abse；Can you give me a formula for a jet black sten he weather ？－F．w．M．asks：How can I etaln bamboo

 willpreventanam from molding without injuring tit taste ？－W．H．G．asks：What will protect gold jewelr rom the staln caused by beat of the blaze whlle solver
 when a freabgreen board or plank is firstexpoosedto
 meter，will the hole remain of the same size？Will the plank，or both？－W．F．W．asks：How can I glazt


## communications received

The Editor of the Scientific American knowledges，with much pleasure，the re eipt of original papers and contribution pon the following subjects
On Railway Earthwork．By J．B
On the Amerizan Log．By S．B．
On Cobalt and Nickel．By G．W．B．
On Raiding Ants．By J．S．D．
ing
B．w．－W．N．W．－H．W．D．－F．w．－F．H．D．－G．T

Correepondents whose tnquirtes fall to appear ahould repeat them．If not then published．they may conclude
that，for good reasona，the Edtor deelinee them．The

Several correspondents request us to publish replien
o their enquirles bout the patentanluty of thetr ventions，etc．Such enquitrles will only be answercid by letter，and the parties should give thelr addrespes．
 also those having goode for sale，or who want to ind partners，should send with their communteations an
 devoted to auch enquirles
［OFFICLAL．］

## Index of Inventions

## OR WHich

Letters Patent of the United States
were granted in the week ending June 9，1874，
and mach bearing that datr．
［Thooemarked（r）are relesued patent A ．


