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ddrees M10. Pects $\&$ Co., Nuw Haven. Conn.

## 

We are obliged to J. H. W. for his explathe subject ti exexhausted. - U. U. . hould consunt a maker
of hay presses.-F. Re. S. . an harden iron mold boards
 230, vol.28. Shaving with pumiceestone 18 desecribed on
pp. 19, 180, 21. vol T. H. G. asks: When is it winter in Pata
gonia (Cape Horn) and when It it midwinter there? $A$. onia Cape Horn) and when is it midwinter there? A.
WInter commences on the 2 Ist of June, and it is mid winter in the month of August.
G. M. asks: 1 . If a vessel containing 5c ©
btc feet of compresed arr be placed instde of another
 be very graduahy let tnto thls ressel, with a proper
means of escape to prevent an increase of presure.
 how long would the compresesed alr supply the necees
sary amount of air for respiration, the alr belng com pressed to 200 bos. per 8quare tnch? 2 . How ts gas of am monta made? A. 1. A person making 15 respirations in
a minute $\mathbf{v o u l d}$ require, under ordinary circumstances, $4: \times 15=6.5$ cubic incles of a air. The tnner vessel wouk at ordinary pressure. Hence the air would support respirawelghts of quickilime and sal ammontas, powdered and
 ounce of a al
of the gas.
C. E. G. asks: How are we to reconcile the
concusions of scientifc men in regard to the strength of ron at extremes of temperature? Common observa tion shows fron to be stronger at a temperature of from
$75^{\circ}$ to $900^{\circ}$ Fall. than at from $25^{\circ}$ to a $35^{\circ}$ Delow zero. I went
 below zero, in attemptng to drive a mill dog with a mal
let, b broke the dog in two places. The iron showed
elt clean breaks. The rod was one tnch square at one break,
and $¥$ tnch round at the other, parting in both places at the log with my hand covered by a buckskin milten. This dog also broke where it was a inch in diameter
Thinktin it dangerousto try to run the saw, we thought we would try to get some stones and tee from the tal
race that obstructed the water. 1 took a common crow
 tnches from the fulcrum, showing a perfecty clean
break of $1 \%$ inches square iron. Thinking the laws of coneston had suspended for a time, we suspended oper
ations unt1/
a R. H. Thurston are a paradox. A. The following con-
clusiong, as stated by Profesoror Thurston in his paper on clusions, as stated by Professor Thurston In his paper on
the . Molecular Changes Produced in Iron by Variatitong 10. Therature," will probably make this matter plati
 capabillty of sumatanIng, 'dead 'loads. .11. That the gen
eral effect of change of temperature 1 to to produce ghang of ductility, and consequently, change of resilleuce and Ther change is opposite in direction, ani usually greate In degree than the variation simultaneously occurringin
tenacity. The practical resuit of the whole investiga ton is hat the and copper, and probabiy other metala
do not lose thetr power of sustanting $\cdot$ dead 'loads a

 pressure of steam should be used, and how long should
they remain in? Is there anything that. If put in the water, will faclitate the softentng of the wood? 2. Why
were ell the Amertican quarter and halves of dollars
made made in the year 1 s53 3tamped with an imitation of the
sund ray y on the eagle side and none before or since A. 1. The steam chest for bending timber is commonly made of wood, and connected with the botier. It it the
exposure to the heat of the team that toftenus the wood and probably nothning put into the water will hasten the process. It doens on mate me much didference what prese-
ure of steam tis maintained. Atter the pieces are softened, they are bent to shape, and then, betng secured in that posttin, are placed again in the steam chest, to
take a set. 2. Probably because this sulted the desiguer
ta
C. C.S. asks: 1. What is the length of the
 Orleans in a amall boat. Do you think this is feasibl Whateize andikind of a boat would you advise us bulld? 6. Do youknow of any oodbook describlng the
Misetstippl? A. $1.1,1,4 v$ miles. 2. At nith water, the velocity 19 about $2 \cdot 6$ miles per hour; at low water, be
 to 20 feet long. 6 . There are numerous gulde bcoks the Mississippl, which doubtless contain much that
would be intereating and useful to you on your voyage.
 remedy for that every day annoyance, a bad cold in the
turoat? A. 1 . There are varlous methods of decalco. mania or transferring of pictures. The fnest 1 s to trans er the pictures on wood. Paper pletures for this pur
pose are now sold by the stationers. A varnish is ap piled to the picture only, and it tis then pressed on the wood. When dry the paper is dampened and rubbed
off with the tingers, leaving the picture on the wood. 2 . The way to prevent takng cond 18 to beep the feet fet al.
ways warm and dry, the chest well protected and to eat plenty of nourishng food. The remedies that have
been prescribed for sore throat would fill too much
water 18 gaod remedy if used the moment a sensation
of soreness 18
perceived. Singers should wrap the throat of boreness 18 perceived. Singers should wrap the throat
up after exercle when golng out tinto the cold air, but at so as to harden tt to the weather. Growing peards so as to harden to the weather. Growng beards
gald to be a good preventive agatint coldd in the throa or those who have them to grow.
S. IV. asks: How can I run a small bellows
ithout usingmy hand? A. You might arrange a moton to be worked by your foot.
R. B. S. asks: 1. How can I makea battery battery, such as is used in telegraph offces, do? 2 . Can you tuform me how to clean and poltsh shells of variou
kinds? 3. I have tried to make a Hero's fountain, bu have not succeeded very well. Suppose I have two tanks,
each one holding five gallous, what size should the inside of the tubes connecting them together be? Are
the tubes

 All the tubes can be the same shze except that you hould contract the opening for the jet. Hight of uppe
vessel below bottom one is regulated by the hight of jet required. From 4 to 5 feet would do verywell.
W. . asks: What is an average analysis
 W. S. B. says: 1 . I lave heen told by ser-
ralmechanis that a block cannot be squared on
 ach other, cannot he obtitued hya conmmon try square.
Can a screw be set up tighter with a long gerew drive han a short one? What is the theory of ths? A. of a carpenter's suare, frat dressing one face out of
wind, and marktug a squire un tr, to serve as a gulde n laying off the other faces. 2. Thetn creased inefflien
cy of a long screw driver ta due to the greater cy of a long serew driver is due to the greater leverage
afforded by inclining the tool, as aliready explatined on page e93, vol. 18.
R. J. T. asks: Can a locomotive start with nore cars, onc crank being on the center or dead woint

E. H. B. asks: What is a remedy for biting
the finger nalls? A. Keep the tingers out of the mouti? If that falls, wear mittens.
R. H. D. asks: Will the same amount of effect han on a abort one? A. Ava mattere of fact, It is
well known that more effect can be produced with a long serew driver than a short one. see p. 393, vol. 18.
 the den up uy pourlng in melted lead, but $I$ could not
make the lead to ahhere to the fron. How can 1 make he lead stick? A. You can make the lead adhere b
C. D. asks: Why is it that, during rainy barometer falls? A. The barometer falls just before stormy weather, because the vapor in the air $:$ ss con
densed, thus llghtenling the column of alr that supporta the mercury.
Q. J. V. D. says: You say that for casting
mail articles of ircin, plaster of Paris would be better than clay. Will it also do for brass, for articles 6 or 8
zzs. In welgh cas. in welght? Would vent holes be needed for the e ed
cape of gas? A. We think that plaster of Paris would answerin the cases mentioned, if proper vent holes were
P. G. K. asks: Is it precisely
noon, at any given polnt when the sun is
due
doclock that polnt? Does it vary? If so, what is the varatition A. If ts precisely noon under these circumstances at
tour times the year about Deeember 25 A pril 16 , June Tour times in the year, about December 25 , A pril 16, June
6 , and Septemberi. At all other times the noon time 16, and Septemberl. At all other times the noon time,
as shown by the sun, must be corrected by the equation as shown by the sun, must be corrected by the equation
of time, which tis given in the Nautical Almanac forevery day of each yer
sult a lawyer.
J. R. asks: Where should the draw bar of
locomotive be attached? R. M. S. asks: 1 . What is gasoline com-
R. coal oll? If so, why? 3. What are naphtha and benzine composed of? A. 1. The term gasolne is a barbarism
applied to highly rectifed naphtha, one of the lluuid hydrocarbons distllee from petroleum. 2. It is extreme.
ly dangerous to attempt to burn it in the ordinary man ier, on account of tis volatillty, the combustiblity of its
vapor, and its explosiveness when mingled with the air 3. Naphtha and benzzine are two names for the same
thing. They are compounds of hydrogen and carbon. We do not know the other fulds you mention. J. F. A. asks: What proportions of carlon-
ate of soda and sulphurlc acta, each in solution of equal quantites of water, will generate the best quallty of ity of he earoonticaceld gas will not bee aftected by vary-
ing the proportlons or the streng th of the solutlons emIng the
ployed.
L. H. D. asks. 1. How can I make a gold
wash? 2. How can I mold hadd rubber. so that it shal retain its elastlctity? A. .1. You can make a gold wash
a follows : Disolve 1 part of gold in parts of witr as follow : Dissoive 1 part of gold in 3 parts or aitro
murlatic acid (a maxture of ntricic and muriatic acids) evaporate untll vapors of chlorine cease to be evolved,
and then set the solution aside to crystalize. Dissolve The crystals, which are the terchhorde of gold, in water
To the oulution add ether and shake the two tongether which is an ethereal solution of gold. When this is ap plited with a c cimel's hatr bruan to polished iron or steel
the ether soon evsporates and leaves the surface cow the ether soon evaporates and leaves the surface cov
ered with a fllm of pure gold. In this way any fancy de. vice or writing may be executed with faclilty. 2. Whe Tubberis melted It does not readily again become sono. blisulphuret of carbon 95 parts, and rectified alcohol
parts, until lt swells tuto a pasty mass, which may then parts, untul it swellis tuto o pasty
J. A. E asks: Can you give me any infor-
mation respecting the merits of the vera Cruz cement mation ersecting the merits of the vera crux cement
used by the Mexichns for bullding purposes?
can How 18 very highly spoken of by engineers whohave madeex-
periments to determine titsqualittes. 2. See p. 7. vol. 30 .
F. T. H. says: In trying to make gun cot-
on, it took a alaudful of cot ton and poured uyou t outb Sunce of nitric and one lalaf ounce of sulphuric accids,
nixed wel, and allo wed to cool before pourlig. Alte
 ates, removed it and washed it until the cotton did not ave any chemical ctfect on bue litmus paper. I then
dried and ignited it, ubt tit burnt only as conmon conton ortions and probably not strong enough. Treat as fol pows: Mix together equal measures of concentrated
itrric actd ( S G. $1: 5)$ sud concentrated sulphuric accic
 as posible, for 4 or 5 minutes, pronioting the action of the liquidd br stirring with a glass rud. Then pour the
acids off and squeeze the cotton as dry as possible, by means of the glass rod, or between plates. Then throw ne cotton into clean soft water, as large a quantity as of water until the article is perfectly free from acid.
Lastly dry by a steam bath at about $180^{\circ}$ Fah. Only mall quantities of cotton should be prepared at a time and the greatest caution observed in handingafter man ufacture. Goodguo cottone
out either smoke or residue.
S. A. B. says: I am told that nitrogen may
be formed by fabricating coke. will you explain this? Doesmed by fabricating coke. Will you explain this?
Donat ocking the co:ll accomplishes it, and can it be doue in open air? 2. . How much nitrate of potas.
sa will be sufflent to put in a tun of fertilizer? sa will be suffeient to put in a tun of fertilizer? A. 1 .
There is no free nitrogen formed in $t$ he destructive distillation of coal. A ready means on the small scale of
obtaning nitrogen is to buru up the oxygen, in a hell glass flled with air, over water, by means of phosphorus,
2. Dr. Jeannel's fertilizer (see p. tol, vol. 28) contain J. M. says: I have a plain cylinder boiler 1 (i
feet long. The fre goes under it and up the smoke stack. Would a check wall buill at the far ead of boiler save
fuel? A. We do not thitnk thic proposed arrangemeat A. K. asks: 1. What fish swims the fastest.
and where could s see a good drawing of the same? and where could I see a yrood drawing of the same? ?
What is the name of the fluid whith removes all dirt rom the works of a wat ch by immertion? A. 1. Ethe
the sword figh or tunny. You will tud them illuatrate in almost any good encyclopedia. 2. See p . 98 of our
ool. 26 .
R. T. asks: How can I make a filling for
walnut wood, that will take varnish well? walnut wood, that will take varnish well? A. Mix with
good whiting such colorg as will produce the desired hue. Give the wood a good coat of oil, and spriakle the
mixture over the work untll it is pretty well covered, Gus fuling, let dry, and varnish.
Minerals, etc.-Specimens have been re ceived Irom the following corresp
examined with the results stated
S. S. S. This is a tine specimen of micaceous oxide of
iron. It is often found in connection with common iron. It is often found in connection with common
speculariron, but rarely in sufflecent quantities to be explored by itself.
N. R.T. Jr.- 1 . Copper pyrite8, a compound of copp er
Iron, and sulphur. 2. Quartzconglomerate. 3. Iron py W. H. H. Tids Red $x$ xde of zinc and magnetic iron

E, E. B.-1. Clay with oxide of iron. 2. Clay contain
our mincral is shale, and it presence it considered a strong indication of coal in the viciuit-y
The bituminous variety, however, is more closely con nected with coal. The presence of bitumen may be eas in the flame of a lamp.
W.S.-Your mineral is bog iron ore a variety of brow oxide of iron. Bog iron ore generally yields about 30 of
35 per cent of cast iron; but on account of its containin a small proportion of pnosphoric acid, the bar iron made fageously smelted with the brown oxide aud other ores
tat

Josiah M. Hess, 202 East Washington street Indianapolis, Ind., wishes to know who makes the best
horse radish grater. Will some correspordent inform

## COMMUNICATIONS RECEIVED.

The Editor of the Scientific American acknowledges, with much pleasure, the re eipt of original papers and contributions pon the following subjects :
On Photographs of the Invisible. By J. H On an Aerial Ship. By W. O.
On What to Do in Hard Times. By G. F, and by J. P. A.
On the Ventilation of the Serate Chamber
On Small Steamers. Pr(i. S.C
On a New Means of Producing Fire. By
On Purifying the Air. By S. B.
On Administrative Reform in the Patent Office. By G. R.
On Some New Inventions. By C. W. P. On an Instance of Itmospheric Ref wartion By T. H.
On the Alignment of the Hoosar Tumel By C. F
On a Total Eclipse of the Moon. By J. M. B Also enquiries from the following
F.S.L.-D.C.T.-K. A. H.-H. M.P.-G. W. K.

Correspondentsin different parts of the country ask
Who makes steam fire engines? Who makesa pie liftet of copper wire? Who seils knitting machiues? Wher can machinery for light cooper's work be obtaloed?
Makers of the above articles will probably promote their interests by advertising, in rep's, in the scis tific Amprican.
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manufacturers, or where specifled articles are to be had, also those having goods for sale, or who want to find
partners, should send with their communicationg partners, should send with their communications an the head of " Business and Personal" which is specially devoted to such enquiries.

