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narket. Price low. D. Fribbe \& Co.. New Haven. Ct
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1, $2 \& 3$ H.P. Engines. Geo.F.Shedd, Waltham,Ms.

## 

A. F. K. will find a description of a breech loading cannon on pp. 149, 402, vol. 27.-A. S.
will tind that galvanizing cast iron is described p. 59, vol. 24.-D. G. \& S. will tnd directions for an nealing steel on p. 107, vol. 29.-A. R. N. can tan
buffalo hides with the hair on by the method de buffala o hides with the he
scribed on p. 59 , vol. 29 .
(1) A. R. C. asks: 1. Will copper (such as the bottoms of wash boilers or tea kettles ara
made of) do for a boiler to run a small engine? want it to run for 6 hours and be heated by kerosene. A. A boiler to run an engine of this size,
and do any work, could not conveniently be heated by a kerosene lamp. It may be made with
central fue, using charcoal as fuel. 2 . How lo can water be safely in a boiler? $A$. It is well to set the gage cocks so as to keep the boiler at least alf full of water.
(2) A. T. W. asks: 1. What is meant by the pitch of a propeller? A. The pitch of a pro-
peller is the distance it would advance in one revolution, if it turned in an unyielding medium, liarge a crew in a nut. a in a cylinder 12 inches
lat in your issue of March 20 ? dimensions should I make the boiler? A. About 12 inchesin diameter and 15 inches high. 4. Could
I run a larger boat with the above nientioned diI run a larger boat with the above ni.
ameter? A. Yes, one twice as large.
(3) E L. asks: How can I remove oil or grease spots from a wooden floor? A.In some cases,
it can be washed out with a solution of potash; ban be washed out with a solution of potash, out the stain.
Is the following rule for finding the number of rect? From diameter in inches deduct 4, multiply the remainder by $1 / 2$ of itself, and multiply that product by the length of the log, and divide by 8 . A. There is no rule
(4) J. M. says: 1. My engine cylinder is $1 \frac{1}{4}$
x23 stroke, steam pressure 25 libs., speed 150 revolutions per minute. What is its power? A. We horse power. 2. Would a boiler of cylindrica form, with 6 flues, and a furnace of $1 / 8$ inch wrough iron, so attached that the heat can pass under th
boiler boiler and return through the flues into the
stack, do for engine use? stack, do for engine uset A. Such a furnace
would be apt to burn out. 3 . What is a test tube, and how is it made? A. It is simply a glass tube closed at one end.
(5) J. E. R. a.ks: What is the most effec tua) way of keeping chickens clean and free from vermin? A. Rub upon the roosts, once in every
weeks, a little coal oil. Never set the hens on nests that have been used much. If the little chicks are affected, a drop of lard upon each head has been highly recommended; or a weak solu-
tion of carbolic soap can be used on their heads, ich will completely exterminate the pests.
(6) WW. H. says: I noticed in the Scientific American of February 20 , 1875 a recipe for giv-
ing an oaken color to pine copperas dissolved in ing an oaken color to pine (copperas, dissolved in
stronglye). I did not know what kind of ley, so I slaked some lime, taking the water (after it ha settled) to dissolve the copper, and applied with a
brush. It was a failure. I tried potash, with no brush. It was a failure. I tried potash, with no
better result than to destroy a nice new brush. All better result than to destroy a nice new brush. Al
this expertmenting was on a new table, which my this experimenting was on a new table, which my
wife used to sprinkle the family washing upon. The ble it has turned it ellow, and stained the goods with yellow spots. What is theremedy? A. Strong potash lije, or a concentrated solution of potash
in water, was what is meantin the recipe We unin water, was what is meantiu the recipe. We un-
derstanid you to say that youattempted to disbolve derstand you to say that you attempted to dissolve
copper in the ley, whereas the reclpe distinctly
said copperas, which is other wise known as green
vitriol or sulphate of iron. The wood should be Steeped in the solution; and when wood should b is obtained, it should be thoroughly washed in water, dried, and varnished with shellac in alcoho If you will send us particulars as to what you
used on sour table, whether solution of copper or used on sour table, whether solution of copper or
son, we will endeavor to help you to remove the ron, we will endeavor to help you to remove the
tains from your linen.
(7) C. W. asks: If a rifle ball be shot into a two inchoak board so as to penetrate it, and the same sized powder, and fred up into the air per pendicularly, when the ball comes down, woul not, as the resistance of the air would decreas
its velocity
(8) P. asks: 1. What is the essential dif erence between the Hirsch and Griffth scre propellers? A. The two screws differ from eac other in the form of the blades and the variatio of pitch. 2. What pitch should a 5 feet three-
bladed wheel have to give the best results? iip? A. With a well designed boat, there woul probably be from 15 to 20 per cent of slip.
(9) B. W. asks: 1 . What is the exact vari
ation of the magnetic neede in the latitude of ation of the magnetic needle in the latitude of
Wilmington, N. C.? A. W edo not know that this formation is published; but by writing to som the officials of wilmington, you may get you
question answered.
2. How can I test the polarit of my compass? A. By finding a true meridian from observation of the sun or a star. You will
find a method explained in another column of this issue.
(10) H. R. W. asks: How much mixed pace on outside work? A. According to Traut
fand wein, the frsc coat of paint will take 61/2 lbs. to
hesquare of 100 feet, $32 / \mathrm{lbs}$. to the second coat and 2341 lbs. to the third coat and each subsequent coat, the paint being white lead, and weighed before thinning.
(11) H. C. L. asks: If I were riding in a car going in an easterly direction at the rate of 30
niles an hour, and wanted to jump off, which vould be the proper direction for jumping? We do not think it would make much difference which way you
rate of speed.
(12) L. W. J. asks: I havea small engine, of
16 inche bore, 3 inches stroke. What would be
the most appropriate style of boiler to run it with? A. You can make an upright boiler, with a fue in the center. Diameter of shell, 15 inches: dame
(13) F. K. says: We have, for the purpose of reducing large lumps of coal into smailer,
sets of rolls or cylinders, studded on their perisets of rolls or cylinders, studded on their peri-
heries with points or teeth; these have become pheries with points or teeth; these have become
dull in time and we desire to resharpen them. The dulin in time and we desire to resharpen them. The
cylinders and teeth are made of cast steel, and to cylinders and teeth are made of cast steel, and to
chip them is a tedious and imperfect process. Can we not generate a gas, conduct it to the tooth to be sharpened, heat it sufficiently, and hammer out the point? A. We believe that you could effect it
better by the use of emery wheels, which coul better by the use of emery whecls, which could
readily be arranged to do the work. If you wish readily be arranged to do the work. If you wish
to heat thepoints, however, wepresume you could do it most readily by the use of a blowpipe of oper construction.
(14) J. W.A. asks: In my engine, the area chest ts 100 lbs. per square inch. What amount of blank surface, the two surfaces having been planed and scraped as valves and seaty are usually done? The opening under the valve in the valve
seat is $1 \times 10$ or 10 square inches in area. What is the amount of power necessary to move or slide he valve covering the above opening? Which of the two above mentioned will require the leas
power to slide it on its respective seat? $A$. The power will be the same in each case, if, as we un derstand you to mean, there is no upward press-
(15) W.H. S. asks: 1. What is the value per cubic foot of charcoal, compared with sof bituminous (Iowa) coal, and with hard wood, for
fring a steam boller? A. Coal 1, charcoal 14 woo
and iring a steam boler? A. Coal 1 , charcoal 13. woou
\%. 2.1 have an engine with a rotary or rock cut of valve. With 100 lbs. pressure, doing heav mediatelv after putting on tallow, which grating generally lasted abont five minutes. I tried lard oil and castor oil with the same result. I tried
sulphur and tallow, when the valve worked ver satisfactorily. I worked it about five weeks with sulphur and tallow, and found the cylinder wa the end. Did the sulpbur have anything to do with it? The valve seat, cylinder, and rings ar very smooth and bright. A. It is more likely that the trouble was caused by some lack of prope adjustment.
(16) C. R. B. asks: Why is it that the yolk of an egg cannot be beaten as stify as the white ? A. It is due to the fact that a large proportion of
(17) O. C. B. asks: 1. I have a boiler 20 inches high by 15 inches diameter, with 27 tubes.
 castiron. How much steam would it be safe to car ry ? A.We would not advise you to carry a pressure
of more than 15 lbs. in such a boiler, and we think it would be much better to build one of wrought iron or copper. 2. How large an engine would it take to run a small lathe, 24 inches long, at 600 revolutions per minute? A. Diameter of cylin(i8) $H \mathrm{~S}$, M .
(i8) H. S. M. says: I was recently consult
ed by a friend who is about to enter into the man
ufacture of a oombined ice chest and refrigerator
in which he intends to substitute mechanical force
for the usual daily supply of icc, that is, he intends or the usual daily supply of ice, that is, he intends the motive power being a man opcrating, through a crank or lever, a small ice machine contained in the chest itself. The machine is to be of the ether yppe, in which a quantity of some very volatile 1 iquid is made to boil in a partial vacuum. I wa asked: How long will t take a moderately stron man to make 1ilins. of that the apparatus be as nearly perfectas possible? I computed it as follows, and my client is of opinion that I am wide of the mark 1011 l. . Water will have to be relieved of $38^{\circ}$ Fah. of
its latent heat to reach the freezing point and as its latent heat to reacl the freezing point: and as
1 lb . of water heated $10^{\circ}$ constitutes the unit of 1 1 b . of water heated $1^{\circ}$ constitutes the unit of
heat, hence $10 \times 38=380$ units of heat which have to be taken out of the water before ice forms at all. hen again, on the water passing from a liquid each pound of ice formed, and at the same time remain at the same temperature itself. Therefore
$40 \times 10=1,400$, and $1,400+380=1,80$ units of heat $t$ o e converted into mechanical force and converted back into heat in the condenser of the machine; and as every unit of heat thas a mehigh, we have $\tau 42 \times 1,80=1,374,160$ foot pound which, being divided by 33,000 , qives 4163 , or the number of minutes during which 1 horse power is required to raise $1,374,160$ lbs. one foot high, or to
educe 10 lbs . of water from $\overline{\mathrm{i}} 0^{\circ}$ Fah. to ice ; and sit requires seven men to cyert 1 horse powe onstantly, it will require onc man seren times a
ong; therefore $1163 \times i=291 \cdot 41-60=4 \cdot 84$ hours asth time that one man would be required to work the pump to produce 10 lbs. of ice. To this must bc
dided 25 per cent for friction and absorption of added 25 per cent for friction and absorption of © 05 hours. Am I right? A. The calculation is orrect for the theoretical time, and is very credit ble to you. It is probable, however, that stil age, radiation, etc., than the one you have estimated.
(19) C. D. asks: By what process can I prouce crystalized effects, such as we see on water
oolers? A. If can be done by mixing ground mica with collodion, and applying to the sur-
(20) E. S. F. says: 1. We purchased scme woodworking mactinery which has been standng still for some time, and consequently has be
come gummed. Will kerosene oil be as good as nything to remove the gum, or had the machines better be takenall apart and cleaned? A. It will be better to take the machinery apart. 2. Will kerosene injure the journals and boxes if put on
when we commence running? A. Kervsene oil will not injure the journals, but the dirt and grit
and on them may if you start up the shafts before leaning them
(21) C. F. S. asks: How do you explain the fact that water, being placed in a cellar in a open vessel, will keep vegetables from freezing rotecting apples and potatoes from frost. A. It you will give us further particulars we will investigate the matter. We do not think the presence
(2)
(22) H. B. says: We are making a quantity eastironaugers, about 12 inches long and from

to 8 inches diameter at the ousside of threade The threads are about $11 / 6$ inches apart and of bout the same depth. We wish to polish thes rough exterior by an emery wheel. Is a leathe or rubber belt best? What kind of glue is best A. Use leather and ordinary glue of good quality. (23) D. B. C. Jr. says: 1. I wish to build a water. Please give mc the size of boiler, engine for side wheels), diameter of side wheels, length | boiler 3 feet bumets. A. Engine $4 \times 6$ inches, and |
| :--- | would be the best, a side wheeler or a propelle or a stream with a rocky bottcm? A. It will b est to have a propelier, or twin screws.

(24) D. W. W. asks: 1. What is the differIs the mineral known as fiberous asbestos good or packing piston and valve rods on steam en sines? A. Yes.
How can I make a brown or black enamel or will not crack and scale ofteam chemmon pain oes? A. There is a black varnish made from 31.
(25) J. C. Jr. asys: I have a steam engine and wish to know if you can inform me why the boiler foams. Trancy that the steam pipe is to
small,or possibly the boiler itself may not be legge enough for the engine. The builders say that, af ter she has been two or three months running, sh will come all right; but I find she has not imrouble is probably caused by dirty water. If so, (af fequenty, and ban the
(26) F. M. D. asks: Will you please tell me
ow soot may be used to advantage? A. Wood oot may be used as a fertilizer.
Hownas and bushes? A. Dig down about the base of the
trunk about 12 inches, and incase it snugly with tarred paper to about one foot above the surface of the ground; then fill in the soil.
What are the ingredients of nitro-glycerin? A It contains carbon 3 equivalents, hydrogen 5 , in-
(27) I. W. S. asks: If I insert a platinum wire into a U-shapedtube, fll the tube with a mix-
ture of oxygen and hydrogen, place the mouths of the tube in a vessel of water and connect the
ends of the wire with the poles of a battery, will
the tube be broken when the combination of the
gases takes place? $A$. If the tube be a strong gascs takes place? $A$. If the tube be a strong
one, aud has large openings at the mouths, it will
now can I make a paste or mucilage which will dry quickly, and not make the paper curl up ? A.
Use a solution of pure gum arabic in warm water, Use a solution of pure gum arabic in
and mix a little refined sugar with it.
(28) G. A. Z. says: I am working an im-
provement on the cormon smoking pipe, and provement on the common smoking pipe, and
have to use some metal inside the bowl, in contact with the burning tobacco. Would brass be injurious to the smoker? Would nickel be more suitable? A. Nickel or nickel-
be the better for this purpose.
(29) G. B. B. asks: In your formula for what qualities of lead and tin are meant? Melt together 1 oz . clean lead and 1 oz . fine tin in a clean iron ladle, then immediately add 1 oz . bis-
muth. Skim off the dross, remove the ladle from muth. Skim off the dross, remove the ladle from
the fire, and before it sets add 10 ozs. quicksilver the fire, and before it sets add 10 ozs. quicksilver.
Now stir the whole carefully, taking care not to breathe over it, as the fumcs of the mercury ar pipe into the glass globe, which turn repeatedly pound.
(30) R. S. S. asks: Is there any advantage in having the brake block in front of a wheel, or
would it have as much power over the wheel if would it have as much power over the wheel if
placed behind? A. There would be little, if any,
(31) B. C. \& Co. ask: How can I separate tin from dross? A. The tin is melted and the tem perature raised very considerably in order to ren-
der the slag as liquid as possible, so that it may der the slag as liquid as possible, so that it may
not retain too much tin with it. It is also necessary to stir the melted mass in order to facilitate
the separation of the tin. The clay is then raked out, and the melted tin run into a cast iron pan : where it is allowed to remain for some time, in
order that any slag may rise to the surface; after order that any slag may rise to the surface; after
which it is skimmed, and poured into cast iron which
(32) E. F. H. asks: 1. Which are the best metals for large stencil plates? A. Thin hard
brassis thebest for this purposc. 2. Can scids be brassis the best for this purposc. ${ }^{2 .}$ Can scids
successfully used for this purpose? A. No.
(i3) G. R. C. asks: In dyeing with anilin colors, what can we use to set the dye on cottons,
woolleras, and silks? A. Perkin uses tannin as a woileils, and silks? A. Perkin uses tannin as a
mordant for fixing the colcrs upon cotton and calicoes, working in an acid solution of the coloring icoes, working in an acid solution of the coloring
matter. A basic lead salt may also be used as a
mordant. In calico printing, the colors are usually mixed with albumen, which, by coagulation with steam heat, fixes the color on the fiber. Wool takes aniline dycs from their aqueous (but not $1: 3 j^{\circ}$ to $140^{\circ}$ Fah. In the case of silk, all that is
necessary is to steep it in the solution (the solvnecessary is to steep it in the solution (the solv-
ent being either alcohol or wood spirit) until the desired color is obtained.
(34) A. B. R. says: I have had 750 barrels
of cider on hand for three years. How can I turn it into vinegar? A. Add to cach barrel a little fermenting substance, such as yeast or mother of vinegar.
(35) W. C. R. asks: I want to make oxygen
gas in an iron quicksilver bottle. I want to screw gas in an iron quicksilver bottle. I want to screw amount of chemicals into it, set it on the flre,
and make the gas without letting it out of the bottle. In other words, I want to make a self-conthe. In othcr words, I want to make a self-con-
densing gas cylinder. What amount of pressure will one of those bottles stand? Will 1 lb . chlorate of potash and 4 ozs. manganese yicld too heavy a strain? I put in just half of the above
quantities and screwed on the bottle a steam gage. quantities and screwed on the bottle a steam gage.
It brought the gage up to 170 lbs., and would have It brought the gage up to 1i0 lbs., and would have
gone higher, but I felt a little timld, and unscrewed tleis 12 inches high and 5 inches in diameter, and about half an inch thick, outside measurement.
A. As the volune of a gas is inversely as the pressure to which it is subjected, your bottle,with a pressure of 240 lbs . to the square inch, would hold a little over 214 cubic feet. The question is not with the bottom (in this case) necessarily heated nearly or quite to full redness. And as the rigidity of iron decreases rapidly as its temperature is
raised, we are unable to give you the required figures. Your experiment was a very rash one, a many serious and some fatal accidents have oc
curred, to our knowledge, from like experiments curred, to our knowledge, from like experiments.
Bosides, so small a quantity of gas (if used for the lime light) would last only a very shor
(3i) G. K. says: I want a ccment that wil harden in 48 hours or less, to be of the consistence
of molasses. It is to be used to cement sandstone under salt or fresh water. A. Use Portland cemert.
(37) E. E. S. asks: 1 . What should be the
relative diameters of the wheel on cranr shaft,the pulley on saw arbor, and of the saw, in order to obtain the best effects in a foot power circular particulars: but you will find a number of such machines in use, and you can observe their pro portions. 2. Is there any advantage in placing a
fly wheel on the saw arbor? A. The use of a fly wheel is advisable with such a machine. To your other question, there is a loss of power in the de
vioe you describe.
(38) G. L. N. asks : How can I deodorize kerosene oil? A. Digest it with chloride of cal cium. This will leave it with a pleasant ethereal
odor.
(39) L. D. M. asks: What can I size paper
with, toprevent lard oil from striking through ? with, toprevent lard oil
A. If a closed circuit traversed by a voltaic curant be opened, a scarcely perceptible spark is ob-
tained, if the wire joining the two poles be short Further, if the observer himself form a part of the circuit by holding a pole in each hand, no shock is
is on the contrary, the wire is long, and especially i makes a great number of turns, so as to form obbin with very close folds, the spark, which is great intensity when it is opened, and an ob server in the circuit receives a shock, which is the
stronger as the number of turns of wire increases. . What causes the electric light, and why can it not be used for ill'rmination? A. The heating of the poles is due to the great resistance which the cartric current encounters at these points, the by the intense heat, forming a conducting bridge across the gap, over which the luminous transfer of electricity takes place. 3. How does the core of an induction coil affect the induction current A. It induces a current contrary to that passing in the primary wire at every breaking of the latter, which comes under the head of extra currents, ex an automatic repeater with simply two relays? A. We think not.
(40) E. A. W. asks: What is absinthe? A (41) R. G. asks: Con you (41) R. G. asks: Can you give me a practi-
cal recipe for manufacturing potash? A. Caustic potash is generally procured by the action of caustic lime in a boiling solution of carbonate of potash. The lime unites with the carbonic acid of the potash, forming insoluble carbonate of lime,
which subsides. The clear liquid, containing the potash insolution, is then drawn off and concento a point little short of redness, the liquid flow without ebullition, and may then be run into molds, where it solidifies on cooling, forming the small, grayish white sticks of commerce. The vessels used are either iron or silver.
(42) T. S. R. asks: Does it require mole blade, the size being the same? A. Yes.
What is the best
What is the best for an engine making 300 revolutions per minute, the propeller being 28 inches in diameter, and the engine $3 \% \times 5$ inches? A. The
four-bladedscrew will utilize most of the power. (43) W. M. asks: What ingredients will prevent the explosion of coal oil, and not impair
thelight when used in lamps? A. We can give you thelight when used in lamps? A. We can give you lighter portions of the fluid until the specific gravity of the remaining portion is about 0.75 to 0.80 . 1. How can I clean and polish window panes, mirrors, ctc. ? A. Take a small soft sponge, well
washed from everything gritty, just dip it into water and squeeze it out again, and then dip it into some splrit of wine. Ruib it over the glass, which muslin; rub it lightly and quickly off with a cloth, then take a clean cloth and rub it well again, and finish by rubbing it with a silk handkerchief. 2. How can I clean lacquered frames? A. Usea soft sponge and warm water. For paints, use soap and water. 3. How can I clean plated ware? A.Clean
with hot water, followed by a solution of equal parts of spirits of ammonia and turpentine; and after this, if necessary, prepared chalk, whiting, magnesia, or rouge.
(44) F. E. M. ask

1. What proportion to theperiodic time of the heavenly bodies would be force, supposing the tangential force suddenly destroyed? A. The planets will reach the sun with the same velocity spirally as if they fell direct. its center a body in one second at the distance of one foot, be placed two feet apart, would they meet in one second? A. No; they would meet in two seconds. 3. Professor Tait in Good Words speaks of the tridimensional character of space,and he mentions that mathematicians have speculated upon a fourth dimension. What mode is alluded
to? A. This speculation reaches to serene hights where mathematics become lost in metaphysics and fog.
(45) M. C. R. asks: 1. How can I make an around the two ends of a bar of soft iron, bent into the form of a horseshoe. 2. About what weight would a magnet made of 10 lbs . wire be capable of raising, and what size of wire is the best? A. Coarse wire is the best for making magnets is wire would be capable of raising could not be properly answered without stating how much bat tery is to be used.
(46) D. L. M. asks: 1 . What is the difference is there such a marked difference at particula is there such a marked difference at particular
times? $A$. The equation of time is the difference of the sun's true right ascension and mean longiude. 2. Is the direction of the earth's axis to its tion of the earth's axis is nearly uniform.
(47) L.E.O.asks: Will an anode composed o ackellive cent pieces
(48) G. C. P. Jr. asks
. What is the best way to make a solution of rubber? A. By far the
best solvent for rubber is bisulphide of carbon. Isit safe to heat naphtha over a spiritlamp to boiling heat? A. No; the naphtha may be heate by immersing the vessel containing it in hot wate or hot sand. This had better be done in the open
air. What is the best method to adopt in order to polish amber tortoiseshell? A. Use putty pow
der. 2. When is is faded, can ti be restored to der. 2. When is is faded, can
natural color? A. It cannot.

Of what is fool's gold composed? Is it of any
value? A. It is a compound of iron and sulphur $\mathrm{Fe}_{2}$, and is of considerable value as a source o
sulphur in the manufacture of sulphuric acid. (49) C. D. H. asks: 1. In the construction an induction coil 3 feet long, is it better to use number of iron wires or a bar of iron for the ore? A. Use a bundle of iron wires. 2. How arge should it be? A. As long as the coil. 3.What size of copper wire should be used in the primary
and secondary coils respectively? A. No. 4 in primary and 36 in secondary. 4. How should each be nsulated? A. Cotton tor primary and silk fo condary. 5. What is the best material for ends of the coil? $A$. This is immaterial. mount of battery would be required for a specihc length of spark? A. Six cells will give a ten A. No.
(50) C. W. asks: 1. How can I make wathick paste with hot water Mix the coloring a littl um arabic, and press into molds. 2. How can make plumbago or black lead into cakes? A.
Where pieces of sufficient size are obtainable, hey may be sawn into the required shape. When powder, it may be incorporated with a very with quantity of melted sulphur, or moistene it coheres.
(51) W. L. D. asks: How can I make the use? use? A: We are not acquainted with
in which these tricks are executed.
Can a person charge himself with electricity Yes, by means of an electrical machine. (52) H. C. N. says: I believe that the fol many, and it draws a perfect oval. Take any

square, bisect it, and draw diagonals in the halve of the square. Describe the oval w
pass, using A, C, B, and E as centers.
(53) E. O. M. says: If N. P. B. will use the tang of an old mill saw file, he can turn his
grindstone off true. When one side of the tang
(54) T. W. D. says, in reply to J. H., wh mallanimals, such as muskrat mink, etc.? Th reen hull of the European walnut is turned to account in Europe for dyeing furs black, and the hull of our black walnut could probably be similarly employed. The walnut hull is crushed an the juice squeezed out from the pulp, with the ad-
dition of a little water. A small quantity of lime is added, and thedye is ready for use. The colo is extremely difficult of extraction, and attache itself very readily to any kind of hair,and itis used consists essentially of a soluble alkaloid lately in estigated and known as regianine
Minerals, etc.-Specimens have been reeivedfrom the following correspondents,and examined, with the results stated
F. F. H.-The tin has been acted upon by nitric acid of proper strength. The mineral is tron py-nites.-E. P. C.-It is black oxide of iron, mixed
with quartz. It has too small a percentage of iron to be used as an ore.-G. S.-It is graphite or plumbago.-R. W. T.-It is iron pyrites, and (unless you find it in large quantities) cannot be made
use of. -Y . M. It is mispickel, and contains aruse of. -Y . M.-It is mispickel, and contains ar-
senic 46 per cent, sulphur 20 per cent, and iron 34 . If you heat it strongly, the arsenic will be driven off with a disagreeable smell, and a piece of magnetic oxide of iron will remain.-A. E. J.-It is a secretion of carbonate of lime, and has no value. -J. D. B.-It is iron pyrites.-F. A. M. and O. E.F. No. 1 is altered scapolite. No. 2 is white talc.
No. 3 is aragonite. No. 4 is marcasite, or white iron pyrites. No. 5 is galena. No. 6 is asbestiform talc. No. 7 is a variety of talc. It may be used
as a lubricant orto extract grease, or (when soft enough) as a French chalk. No. 8 is compact talc. No. 9 is talc. No. 10 is tremolite. No. 11 is fer-
ruginous quartzite ruginous quartzite. No. 12 is chrysolite imbedded in volcanic tuff. No. 14 is iron pyrites in granite.
No. 16 is an altered and decomposed pyroxene. No. 16 is an altered and decomposed pyroxene.
No. 17. It is difficult from so small a fragment to decide whether it is pyrite or cobaltite. No. 18 is cupiferous amygdaloid. No. 19 is yellow oxide of
cole iron. No. 20 is compound crystals, containing the cube, octohedron, and rhombic dodecahedron of iron pyrites.-1. F. D.-Nos. 1 and 2 contain some
sulphuret of mercury, along with iron pyrites. sulphuret of mercury, along with iron pyrites.
From Nos. 3 and 6 we obtained no indications. No. 4 contained some iron pyrites in quartz; whether anything else were present could not be determined from the smallness of the amount.-G.C.R. -Both samples consist mostly of silex, with some lumina. The darker specimen was colored with xide of iron. They both contained phosphori fertilizing qualities which they possess are due to the presence of this constituent.-J. O'B.-No. 1 is magnetite, with some vitreous quartz, soda, felspar, and magnetic oxide of iron. No. 2 is lime, magnesia,and garnet. No. 3 is orthoclase. No. 4 is oligoclase. Nu. 5 is hornblende.-D. K.-Nos. No. 2 is not an iron ore. Itis a silioate of alumina,
lime, and magnesia, with some oxide of iron, but not sufficient for extraction. No. 3 shows shining der is a mixture of quartz and felspar. No. 5 is not metal, as you say. It is a partly reduced sul phuret of iron, exceedingly brittle from presence or magnetic iron pyrites, w. F.-It is pyrrhotit or magnetic iron pyrites, and contains 39 per cent
sulphur, 60 of iron, and traces of manganese and nickel.-F.M. S.-It is galena or sulphuret of lead and contains 85 per cent of metallic lead.-E. J. M -These specimens consist of cal bonate of lime
and may have come from the skeleton or shell of and may have
some animal.

## COMMONICATIONS RECEIVED.

The Editor of the Scientific Ammrican ao nowledges, with much pleasure, the recelpt of or iginal pape
subjects:
On a New Nunerical System. By F. E. On the Sun's Orbit. By J. H On Stationary Engines. By J. C.
Onthe Currant Worm. By C. T.

## answers from the following

F. P. M.-R. H. S.-J. T.-F. H. W.-N. B. D.
R. K. W.-J. T. P. - N. F.-R. S. W.-N. W. H.
F. H.-N. K.

HINT8 TO CORRESPONDENTS
Correspondents whose inquiries fail to appea may conclude that, for good reasons, the Editor de lines them. The address of the writer should al ways be given.
Enquiries relating to patents, or to the patentapublished here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; ut we generally take pleasure in answering brielly by mail, if the writer's address is Eiven.
Hundreds of enquiries analogous to the followink Whose is the best knife-cleaning machine? Who sells battery carbons? What are the prices of terrestrial globes? Whose is the best hominy
mill? Who sclls the best bone-crushing mill?" all such personal inquiries are printed, as will b observed, in the column of "Business and Per pose, subject to the charge mentioned at the head of that column. Almost any desired infor
can in this way be expeditiously obtaned.
[OFFICIAL.]
INDEX OF INVENTIONS
Letters Patent of the United Staten were Granted in the Week ending A pril 6, 1875,
and each bearing that date.


