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F. N. will find recipes for jeweler's white namel on p. 107, vol. 30. This enamel can be colored to enamel on p. 107, vol. 30. This enamel can be colored to taste.-C. T. S. We have no information as to the mar-bleroof of Girard College, Philadelphia, Pa.-F. L.'s queries are not sufficiently explicit.-D. W. can clean his coins by following the instructions on p. 217, vol. 26. — T. H. D.'s query as to the evaporation of ice is incomprehensible.

C. B. H. asks: How can I make imitation pearls? A. These are hollow spheres of very thin glass. A small portion of a pearly substance, found at the base of the scales of the bleak and other fishes, is introduced into each, and is spread over the surface. The sphere is then filled up with white wax or gum arabic.

C. H. G. asks: 1. What substance is most sion and contraction, most readily indicate damp or dry weather? A. A delicate human hair, properly cleaned and arranged. This is used in De Saussure's hygrometer, as improved by Régnault, for measuring atmospher ic changes. Animal membranes, vegetable fibers, and pieces of whalebone are sometimes employed. 2. What material is most affected by actual contact with water? A. The chlorides of nickel and cobalt completely change their color.

J. K. asks: 1. In using steel bars instead of bells, how large and of what shape should a bar be to makeas much sound as a bell weighing 1,000 lbs.? How should it be suspended ? How large a hammer would it need? A. In a properly constructed bell, the cavity of the bell reinforces the fundamental note and greatly inreases its sonority. Moreover, the material is so distributed as to get the largest possible sounding surface. For these reasons a bar should be of large size to give as great an amount of sound as a bell weighing 1,000 lbs. How large it and the hammer should be must be determined by experiment. The bar should be firmly secured at one end.

J. C. F. asks: What is the best preparation to preserve the skins of stuffed birds? Is anything better than arsenic? A. Carbolic acid answers well for temporary purposes, but areenic is the best permanent preservative. 2. What is the best treatise on the art of stuffing birds? A. The best treatise is in the form of instructions published by the Smithsonian Institution for the guidance of collectors on exploring expeditions Apply to Professor Baird, at Washington, D. C.

G. W. E.-Write to John Casey, 24 Beek man street, New York city, for the article.

H.C.P. says: A belt traveling at a certain speed, size of both pulleys being given, how can I find the size of pulleys to cause the belt to run at any other specified speed, either faster or slower? A. The cir cumference of either pulley, multiplied by the number of revolutions per minute, gives the speed of the belt and if thenumber of revolutions remains constant, the speed of the belt can readily be changed by changing the size of the pulley. For instance, if the pulley is to make 60 revolutions per minute, and the belt is to have a speed of 1,000 feet a minute, the circumference of the pulley is found by dividing 1,000 by 60, or it will be 162-3 feet.

F. E. C. says: I. We are making a steam engine, the size of the cylinder is % inch diameter, 2% inchesstroke; about what power would it have? A. Multiply pressure on piston in pounds by speed of piston in feet perminute, and divide the product by 33,000. 2. We have an old fire extinguisher for a boiler; will it be safe ? How can we test it? A. Fill the boiler with cold water, and heatit, until the expansion of the wa terproduces the desired pressure. 3. Are there any small steam gages that would do for it? A. Yes.

J. M. asks: Where was the first railroad bridge built across the Mississippi river? How many were there in the year 1859, and where are they situated: A. The first bridge was at Rock Island. There were no others erected previous to 1859. There are now 10 bridgesover the Mississippi, at the following places: Winons, Dubuque, Ciinton, Rock Island, Burlington Keokuk, Quincy, Hannibal, Hastings, St. Louis.

H. C. D. asks: If a person should fasten a stick to a smooth board large enough, when placed at some convenient spot, for the light of the sun to make a shadow of the stick on said board for the space of one year, if pencil marks should be made on the board parallel with the shadows, once a monthfor one ear, at the rising or setting of the sun : would not the earth in its orbital yearly motion produce shadows diverging from the center all around like the spokes to a wheel? A. The different shadows would diverge from the center, but not all around like the spokes of a wheel, but between the limits of earliest and latest sun rise on one side, and earliest and latest sunset on the other. In this stitude, there is a little more than 8 hours difference between earliest and latest sunrise, and the same difference between earliest and latest sunset

B. asks: Do the winds always blow in an exact horizontal line? If not, what inclination do they assume? A. They do not. The direction varies, but in general follows the outline of the earth's surface.

W. W. &. asks: 1. What must be the di-ameter of a spherical balloon which, when filled with hydrogen, will have an ascensional force of 80 kilo grammes, the balloon itself weighing 30 kilogrammes; . Make it so that the weight of the balloon and gas is 80kilogrammes less than that of an equal volume of air. 2. How much zinc and sulphuric acid are irequired to produce hydrogen to fill a cylinder 2 feet long x 9 inches indiameter? A. A triffing amount. You can calculate from the reaction. $H^2SO^4+Zn^2=Zn^2SO^4+H^2$. 3, Please give me the prescription to make vellow, bronze. and golden ink. A. See p. 130, vol. 32.

N. J. asks: 1. How many pounds can a horse of average strength pull, I mean to lift by pull-ing? A. It is generally considered that a horse of average strength, moving at the rate of 2½ miles an hour, can exert a tractile force of 100 pounds for 10 hours of a day. 2. Can you give a simple explanation of the question: Which runs faster, the top or bottom of a wheel of a wagon? A. You will find this explained, by means of a diagram, on p. 862, vol. 28.

R. M. asks: Can I melt iron in a crucible on a blacksmith's forge, to mold plow points in plaster of Paris? Will a crucible last any length of time, so that it would pay to melt iron in it? A. To both the questions, yes.

G. J. asks: What, in your extended expe-ience, is the nearest approach to perpetual motion ever accomplished by an inventor? Is there anything on record in the Patent Office, that is, has any person manufactured or arranged a machine, or invented any mechanical object, that would operate from a propel-ing power inherent in itself, without springs, steam, or other motor known to mechanics, for a basis? If so did it prove to be of any force or power, or did it prom-ise anything useful? Please inform a reader of your paper and a well wisher to the American inventive faculty. A. The nearest approach to perpetual motion is the example of the man who placed himself within a tub and, by a steady upward pull on the handles, ex pected to rise in the air. But he found that the tub was pushed down by his feet just as much as it was pulled up by his hands, or, in other words, that action and reaction are equal, and therefore he failed to ascend. He has had many successors, who have aimed to overcome the difficulty by interposing levers or cogged wheels, arranged either to pull against each other, or placed be-tween the hands of the operator and the handles of the tub. The principle is the same in all such cases, conse-quently the thing won't work. The simple tub is the nearest approach to success because it is attended with less friction. The interposition of wheels or levers wastes a portion of the force. The jet of a fountain, for example, willmost nearly reach the level of its supply if allowed to rise in the air unobstructed. If the jet is compelled to turn a wheel or operate a lever, its hight is of course diminished.

from one to three minutes, and which would not blow out ordrop sparks? A. There is a magnesium lamp which can be successfully used for illumination and lanterns, which is constructed to remedy these defects. 3. What would be the most convenient way of genera-ting electricity for the electric light in a compact masary for a light visible five miles? A. The most convenient way to obtain the effect desired would be to use 40 flat Bunsen cells and an electric lamp. 4. Would the electrical machines used for medical purposes have sufficient power? A. No.

D. Y. H. asks: Which is the most economical steam engine, (1) one in which the cut-off is at ½ or % of the stroke, and the momentum is obtained by the governor and throttle valve, or (2) one in which the cut-off is regulated by the governor, and the regular momentum is obtained by large and small expansion? Which is the most economical. (3) high pressure and large expansion, or (4) low pressure and small expansion, if all other things are equal, with well covered cylinders, pipes, etc.? A. As we understand your ques-tions, the second and third cases will be more economical than the others.

D. M. asks: What is the material to use to prevent a hardened polished steel plow from rusting and allow it still to retain its luster? I have been usingclearvarnish, but it is not effectual. A. It will be necessary to keep it covered with oil, when not in usc.

"Sufferer."-In reply to this correspond-ent, who asked how knock knees may be cured, Dr. Chapman, of New Haven, Conn., says: After growth diminish in exact proportion to the age up to the peilod when full growth is reached, that is, the younger the patient, the better the chance of recovery. The cause is not, as generally supposed in the majority of cases, accident or natural deformity, but an impover ished state of the system in very early life, brought on by disease or improper food. The treatment varies ac-cording to the extent of the trouble. If the legs are too weakand the joints too loose to bear the weight of the body, the recumbent posture must be maintained for months: at the same time the legsmay be bandaged in such a way as to keep them in the straight position ; tonics, such as iron, quinia, and cod liver oil must be taken in one form or another, and electricity may be used to excite the weakened muscles. In cases not so severe as this, or in such cases after the preceding treatment has conditioned up the legs, a different method is followed. The tonics are given and the electricity used, but about like other people; but the legsmust still be bandaged in a peculiarway. A stiff and straight iron rod. flattened at each end and padded, of the length of the eg is fastened to the outer side of the leg. It will chat two points, on the hip and ankle, and a bandageisplaced around the knee and rod, drawing them together or towards each other, and thus keeping the legin a nearly straight position. For a few minutes every day the rod should be removed so as to allow the weight of the body to fall naturally on the knce. This is the best known treatment; but patience, skill, and good nursing are requisite, for the disease at best is a troublesome and long protracted one.

G. A. D. asks: 1. How can I make the cheapest and simplest battery? I have been trying to construct a galvanic battery, but have not succeeded. I constructed it on the Bunsen plan, but it would not work. A. Use pieces of zinc for one plate of the batteryand pieces of gas coke for the other, and charge with dilute oil of vitriol. 2. What is the principle of the kaleidoscope? A. It depends on the repeated reflection of any object, placed between two small mirrors which are at an angle to one another. The pattern and the number of reflections depend upon the angle between the mirrors. 3. To what hight can a balloon scend? A. Tosuch a hight that its weight is just equal to the weight of that amount of air which it displaces.

P. and other correspondents ask what is put in starch to give the shirt bosoms a gloss. A. A piece of paraffin or white wax, about the size of a hickory nut, in each bowl of starch. The managers of one large shirt factory, however, assure us that they produce the polish by the skillful use of the sad iron only.

J. W. G. asks: How can melted glue be kept liquid whencold? A. Take best pale glue 2 lbs., soft water 1 quart, dissolve in a warm bath; after cool-ing add (slowly) 7 ozs. nitric acid. When cold, bottle off

C. R. asks: Is there any way of removing from a steelengraving spots (both in the margin and on the print) caused by the gum in the back boards of the frame in which it ishung? A. No. Such engravings are rinted on unsized paper, which absorbs moisture so in timately that its effects cannot be got rid of.

L. H. S. says: In your reply to the question of M. M. in regard to the advantage of raising himself by a rope over a fixed pulley, you say that you think that the friend of M. M. is right, when he says it has no advantage over a single rope. Are you not hasty in yourconclusion, and ought not scientific men to be able to give definite answers to questions which admit of proof by experiment or mathematical calculations? I am inclined to believe that M. M. is right when he claims an advantage of nearly one half. And in the where the second coincident with a straight line, you show from their equations that this cannot be so; the straight line being of one order, and the circle of another, they cannot coincide. That is all well enough so far as the mathemascussion is concerned, but do you conside mind of man to be canable of conceiving of infinity? If an infinite straight line can be conceived of, may not a circle be conceived of also, of which the straight line hall be diameter or chord, and vice versu? When the difference between a straight line and a circle becomes infinitely small, do they coincide? I claim that the mind is incapable of conceiving of infinity, and just so soon as men begin to discuss a proposition which cannot be conceived of, they are over their heads, and utterly at a mental loss. Everything infinite coincides. A. With out going into the metaphysical question that you have raised, we may say that the mathematical demonstration has the advantage, in giving the results without requiring a vivid conception of infinity. The question bout the rope is considered on p.219 of our curren volume.

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Z. B. asks: Has the first link of a train of ars the whole pull or weight of cars on it? A. Yes. 3. If a link of 1 square inch section will pull 30 cars. will a link one hundredth part of an inch section pull car? A. Yes.

A. T. says: 1. Please give me a recipe for transparent cement, not soluble by dampness? A. Use powdered mastic and heat. 2. What is the difference in the heat of a room heated by steam pipes, and one heated by a wood or coal fire? Is not the heat from steam pipes more searching and dry than heat from either a wood or a coal fire? If so, why is it? A. Steam pipes give a mild, diffused heat, but at the same time arrangementsmust be made to supplymoisture to prevent dryness. This is sometimes effected by attaching small scape cocks to allow a little steam to enter the room. 8. What is the thermometric difference in heat radiating froma steam pipe with 70 lbs. pressure per square inch and one with 101bs. pressure per square inch? Will it benearly the difference in the temperature of steam at 10 lbs. pressure and at 70 lbs. pressure? A. No. It would be proportional to the more rapid flow of steam through the pipes at the greater pressure.

J. K. asks: 1. What is meant by a high pressure and a low pressure engine, and by a low press ure engine and boiler? A. Non-condensing and con densing. 2. What is meant by link motion, and what by valve motion? A. The mechanism for operating the valve. 3. If I boil away one cubic inch of water, in a box of one foot cube, will I have any pressure in the box? A. Yes. 4. Will I get any by further heating it? A. Yes. 5. Can I explode the box? A. It depends up on the strength of the box.

E. M. C. asks: 1. Is plating with aluminum successfully practiced? Why would it not be, for many ornamental purposes, superior to nickel, and (as the metal may be derived direct from clay) possibly cheaper? A. The cost of extracting a luminum from clay is still too great. 2. Can you tell me of any way in which magnesium can be used (without too expensive appar atus) for making signals at sea? The wire orribbon will not burn continuously, and requires the aid of an alcohol flame to insure continuous combustion even where not exposed to drafts. If burnt in a lan tern, the glass is soon coated with the condensed mag nesia; and if not thus protected, the wind blows the whole thing out. Is there any way of using it (simple end of the siphon that discharges the liquid should or combined with other materials) in torches to burn on a lower level than the end into which it is drawn.

J. T. W. asks: How can I clean silver plate? A. Use prepared chalk in cold water; apply with a plate brush, chamois leather, or soft woolen rags.

W. M. W.-You appear to have both legs of the siphon of the same length. The size of your pipe answers well enough, but it is necessary that the end of the siphon that discharges the liquid should be

J. W. G. asks: How can I make bronze and blue writing inks? A. For blue, use 2 ozs. Chinese blue, boiling water 1 quart, acetic acid 1 oz. Dissolve the blue in the water, add the acid, and it is ready for use. For bronze, use the common blue ink of the shops in a steel pen; it will turn bronze by the action of the metal.

J. H. P. says: It is generally believed that a railroad bridge is less liable to give way when the passing train moves slowly than when under full speed. Is this correct? Boys sliding or skating over thin ice rightly judge their safety to depend in a great measure upon the celerity of their movement. Grant that a bridge has one weak place, one place weaker than any other of the same bridge; and that a train has one can or combination of cars heavier than any other car or combination of cars of the same train; and further that there is one point (center of gravity) in that heavy car or combination of cars where the strain or gravit is greater than at any other point. Now, as it is th last straw that breaks the camel's back, so by parity of reasoning it is that point of greatest strain or gravity that causes the bridge to give way at the weakest place Again, grant that a bridge never falls to pieces all at once, but that in the order of time one part-pin, brace or beam-breaks first, then another part, then another till the final smash, each break occupying, succeeding, and being succeeded by an appreciable moment of time; and further, the more rapidly the train moves, the more evenly the greatest strain will be distributed over the bridge and the less time it will have to act upon the weak point; and it follows, other considerations being out of the question: That the more rapidly the train passes over the bridge, the less liable will be the bridge to fall. Is this correct? A. This theory would be correct, if a train passed over the track as a boy of inequalities in the track and uneven speed, is coninually striking blows as it moves along; and the faster moves, the more rapid and violent are the blows.

MG. T. D. asks: How is the crystalline ap pearance of galvanized sheet from produced? A. W believe that it is produced by the crystallization which takes place in the cooling of the zinc surface on with drawing the iron plate from the bath of molten metal.

J. K. R. asks: At what temperature will plumbago fuse, or what degree of heat will it sustain without fusing? A. It will not fuse at, and should sustain, the highest heat of a wind furnace.

W. C. K. asks: How can I prepare common cotton sheeting, so that it will be sufficiently close to use for a sail? Without some preparation it will not hold the wind. A. Try a thin solution of india rubber in bi sulphide of carbon.

A. E. G. asks: Will you give me a test for the presence of alcohol in solutions? A. Pure alcohol must completely volatilize, and ought not to leave the least smell of fusel oil when rubbed between the hands nor should it redden litmus paper. When kindled, it must burn with a faint bluish, scarcely perceptible flame

G. O. S. says: I am building a small pleas-ure steamer to draw 2 feet of water. What tunnage to the market value of the same? A. From 25 to 100 per cent, according to size and quality. will she carry? Her length is 47 feet, beam 4 feet, with flat bottom? A. Calculate the displacement, in cubic J. H. W. asks: What is the nature and amount of friction on a ship propelled through the wa-ter by steam or wind? A. You will find the subject treated in Bourne's "Handbook of the Steam Engine." feet, for any draft, and divide by the number of cubic feet in a tun of water.

G. H. asks: 1. What will rust iron the most and in the least time? A. A solution of salammoniac will answer. 2. What is the wax which the bar bers use for blacking the moustache composed of? A It generally contains a solution of nitrate of silver.

J.W. M. asks: I. What is the rule for placing boiler rivets, and for the size of rivets to get th greatest strength in different thicknesses of iron? A It is usual, in single riveted joints, to make the diameter of the rivets from twice to once and a half the thickness of the plate. The distance between the centers of rivet holes may be found by adding the diameter of the rivet to 0.7854 times the quotient of the square of the diameter of the rivet divided by the thickness of the plate. 2. If we use a common horse power, run a lever 50 feet from center, and lay a 3 feet endless railroad 100 feet diameter, would it do for such heavy work as a 3 run flour mill? We should use a small locomotive for power. Would it be economical ornot? A. We do not see any thing of special merit in the plan. 3. What is the size of the largest locomotive driving wheels, and mens of lithographic stone; but in order to determine its'yalue, practically, a specimen about 12 inches long on what railroad are they used? A. The largest of which we have seen an account are on some locomotives in the Great Western Railway in England. They are 8 feet in diameter.

T. C. S.—The solution on p. 300, vol.29, seems to be correct. The relation between the power and weight was required for a definite position of the machine; and though this relation is continually varying, it can be found, for any particular point very reliably. You will find the subject treated in any good work on mechanics, showing how to deduce general formu se, by which

H. T. G.asks: Can air be so confined as to

to running a locomotive, provided a constant supply could be obtained? Has there ever been an air engine

in operation? A. Air compressing machines, and the

use of compressed air for motors, are quite common. You can get full particulars from the manufacturers.

geared to the best pump made, raise the quantity of water used by the wheel to $\frac{1}{3}$ the hight of the fall? A.

According to some of the best results given in tests of would be 0.55 the hight of the fall with a centrifugal

M. A. V. asks: How much water ought to

be evaporated into steam of 60 lbs. per square inch pressure, by 1 lb. of coke, using cold water to feed the boller? A. About 7_{51} lbs., if the boller is well de-

J. H. asks: 1. Does the power of the ram

increase as the square of the fail increases? A. No. 2. Is the power the result of the impetus acquired by the discharge? A. Yes. 3. Would it be practicable to

C. S. A. asks: 1: If a pipe is forty feet high and filled with water, what will be the pressure to the

square inch on the base? What is the rule for telling the pressure of water on the base, the tube being of a

specified hight? A. Multiply the hight in feet by 0 433. In the example given, the pressure per square inch on the base is $40 \times 0.433 = 17.32$ pounds. 2. When the steam

gage registers 60 lbs., does that mean that there is60 lbs. pressure to the square inch of surface of the boil-

er? A. Yes. 3. How many gallons of water does an ordinary locomotive carry in its tender? A. From 1,500

to 2,000, 4. How is the expansion and contraction pro-

wided for in the bridge at St. Louis? Will wire rope work over six inch pulleys subjected to heavy pressure

stand the pressure and wear as well as the ordinary

A. M. Y. asks: Can you recommend me any works on armored vessels? A. It will be necessary for you to look over periodical literature. You will find

some matter of considerable value in "Our Iron-Clad

M. asks: 1. Is there any difference between one square foot and one foot square? A. No. 2. Is it correct to say that one square foot is equal to four feet

sousre? A. No. 3. A contends that one foot square

and onesquare foot are equal, and that four feet square

contains sixteen square feet. A. The statement is cor-

R. asks: How can I get at the exact lati-tude of a place in the vicinity of Lake Connecticut

N. H.? A. It is most readily calculated from observa

tions of the meridian altitude of the sun or a star. It can be ascertained, with sufficient accuracy for many

C. V. H. asks: 1. Will nickel coating dis-turb the temper of steel wire? A. No. 2. Will colling

the wire for springs injure the nickel coating? A. Yes. 3. What is the expense of nickeling steel wire compared

Its discussion would occupy too much space for inser

MINERALS, ETC .- Specimens have been re-

ceived from the following correspondents, and

T. J. M.-No salts of any kind, nor any sizing, have

been used in the manufacture of this article. It ap-

pears to owe its character to the way in which vegeta-

H.H.H.-Your specimens are iron pyrites found in coal; one of them is pyrites submitted to heat, and

J. F.-It would be necessary to have some of the black substance from the needle gun cartridge in order to

W. S. B.-It is limonite, and contains about 80 percent

W. J. C.-The samples sent appear like good speci-

T. B.G.-The mineral sent is mica slate, composed es-

sentially of mice and quarts. The folia of mice are sometimes so small that they are hardly discernible by

the eye, as in this specimen. It can sometimes be split

into tabular masses and employed for many common

purposes. It is very difficult to fuse, and has been used in constructing the hearths and sides of furnaces for

ble fibers like hemp have been worked together.

examined with the results stated :

purposes, by the inspection of a good map.

cable? A. See answers to C. B. A., p. 84, vol. 30.

Ships," by E. J. Reed.

tion in these columns

sand from drilling.

pronounce what it is.

x 6 inches wide is necessary.

of oxide of iron.

melting iron. etc.

rect.

works ram under a head of twenty feet? A. Yes.

pump, and 0.45 with a direct acting pump.

S. asks: Can the best turbine water wheel.

For instance, could it be applied

be used as a power?

signed

G. W. H.-Your specimens of ore contain iron. If W. H. B. asks: 1. What is meant by the you wish an analysis, it will cost \$10. vel of any city? A. The sea level is the hight of the ocean, at R. H. W.-Theblue mineral in the rock is silicate of

copper, and contains about 45 per cent of oxide of copper. The yellow is sulphide of copper, containing about 35 per cent of copper.

W. C. C. & Co.-The material sent seems to be of the nature of Portland cement. An analysis will cost \$10. T.C.H.-The shining metallic looking substance is iron pyrites.

S. E. G. C.-These specimens consist of indurated clay or shale, and the action on the piece of iron shown was due to the free silica forming a slag with the oxide of iron and leaving a clean metallic surface.

R. W. F.-This is galena; but to determine the amount of silver in it, if any, will require an analysis, costing \$10. F. A. B.-Thisspecimen ishornblende, a compound of silica, alumina, lime, magnesia, oxide of iron, and

sometimes manganese. J.E. S .- In order to determine the value of lithographic stone, we require a sample about 12 inches long, lock promising. Send us, if possible, a sample of the size mentioned. Lithographic stone is a fine grained limestone; and when of good quality is of a yellowish gray color and uniform throughout. It is free from veins, fibers, and spots; a steel point makes an impression on it with difficulty, and the splinters broken off by

a hammer show a conchoidal fracture.

H. L. C. asks: How can I paint tin so as to give it a fine glossy appearance? Can japanning be done without heat ?-D. L. B. asks: How is wine made from cultivated grapes ?-G. M. S. asks: What kind of paint will adhere best to articles of brass or copper? I want a bright vermillon color, and it is to be exposed to water.-W. V. asks for a recipe for plating gold without a battery.-J. F. J. G. asks: What substance is there which, combined with glycerin, will render leather per-fectly waterproof ?-V. E. Jr. asks: How many planofortes are annually manufactured in the United States ? -B. W. C. asks: How can I remove green beech and cherry stumps in the most speedy and effectual manner without digging them up? I have heard that oil of vit-riol placed in them will rot them out in a short time. Willit do it? If so, how much should be used ?-W. C. L. asks: Can any one give me a rule for setting iron axles ?-J. H. P. asks for a cure for gapes in chickens. The disease generally makes its appearance about two or three weeks after the chickens are hatched, and continues for from four to six weeks. It is supposed that the parent insect lays its eggs upon the nostrils of the chick.which soon hatch into worms and crawl down into the *trachea*, make their way again into the open air and burrow in the earth to undergo transformation.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the re ceipt of original papers and contributions upon the following subjects:

- On the Use of Both Hands. By J. D. B. On the Torpedo. By On Kepler's Third Law. By G. E. W. On Cotton Planting. By W. D. H.
- On Light Steam Rams. By S. S.
- On Two Problems. By G. W. E.

On the Attraction of the Sun and Earth. By D.E.G.

On a New System of Telegraphy. By E. E. W. B.

- On Nerve Force. By I. R.
- On the Pons Asinorum. By F. S.
- On the Detroit Tunnel. By A. H.
- On the Transfusion of Blood. By X. Y. Z.

Also enquiries and answers from the following:

O. G.-R. S.-F. McC.-I. M. W.-E. S.-E. N. K.-D. P. W.

Correspondents in different parts of the country ask : Who makes small oscillating steam ergines for running sewing machines? Who makes machinery formaking paper pulp from wood? Who sells revolving bolts for areasing middlings? Who builds lime kins of the most approved pattern? Who makes a hub boring and mortise machine, to go by hand power? Who sells the best clothes mangle? Who deals in old coins? Makers of the above articles will probably promote their inter. ests by advertising, in reply, in the SCIENTIFIC AMERI-CAN.

Several correspondents request us to publish replies to their enquiries about the patentability of their in-ventions, etc. Such enquiries will only be answered by letter, and the parties should give their addresses.

Correspondents who write to ask the address of certain nanufacturers, or where specified articles are to be had, also those having goods for sale, or who want to find partners, should send with their communications an amount sufficient to cover the cost of publication under the head of "Business and Personal," which is specially devoted to such enquiries.

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work in which the shafting and pulleys for quarter twist belts are illustrated? A. You will find this illus-	presence of oxide of iron, silica, clay, carbonate of lime, chloride of potassium, chloride of sodium, and some organic matters. But it is not possible to tell with certainty, from such residues, whether or not the drinking water is injurious. The water itself must be analyzed. We should, however, in this case suspect	Letters Patent of the United States WERE GRANTED IN THE WEEK ENDING March 17, 1874,	Latch, knob, W. Varah. 148,785 Latch, reversible knob, S. A. Wilford. 148,782 Latches, adjustable catch for, G. W. Burr. 148,662 Lathe chuck, metal, J. J. Grant 148,672 Lathe chuck, metal, J. H. Westcott. 148,673 Lathe cutters, adjusting, J. N. Bodine. 148,657 Lubricating compound, King & Hill. 148,657 Lubricator, J. E. Lonergan (r). 148 196 Marble, artificial, W. Humpbrey. 148,613
not. C. A. asks: 1. What is the best speed for a foot power circular saw, as proved by practice, the saw being 5 inches in diameter? A. As fast as possible. 2. Would it not require too much power to run the saw at 9,000 feet perminute, to saw one inch stuff? A. Yes. 3. Can you furnish the <i>Science Record</i> for the years 1873 and 1874? A. Yes. B. H. asks: What is the greatest speed that has been attained by a locomotive? A. The fastest time that we know of from personal observation is 63 miles an hour. We have seen statements, on apparent ly good authority, that a speed of 90 miles an hour is of- tenattained on many railroads in this country.	this species, the oxide of iron is united by mixture or combination with clay. It ordinarily melts with ease, affording from 30 to 50 per cent of iron. A. S. TYour specimen is neither isinglass nor sili- ca. It is gypsum, and, by burning, will yield excellent plaster of Paris. R. W. FThe shining particles in the black rock are iron pyrites, and are of no value. J. A. D1. Impure limestons. 2. Sulphide of zinc, containing 67 per cent zinc.	Basket, R. W. Van Ornum 148,784	Milk, supplying cities with, F. T. Newbery