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A. F. K. will find a description of a breech loading cannon on pp. 149, 402, vol. 27.—A. S. H. will find that galvanizing cast iron is described on p. 59, vol.24.—D. G. & S. will find directions for annealing steel on p. 107, vol. 29.—A. R. N. can tan buffalo hides with the hair on by the method described on p. 59, vol. 29.

(1) A. R. C. asks: 1. Will copper (such as the bottoms of wash boilers or tea kettles are made of) do for a boiler to run a small engine? I 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 heat ed by a kerosene lamp. It may be made with a central flue, using charcoal as fuel. 2. How low can water be safely in a boiler? A. It is well to set the gage cocks so as to keep the boiler at least half full of water.

(2) A. T. W. asks: 1. What is meant by the pitch of a propeller? A. The pitch of a propeller is the distance it would advance in one rev olution, if it turned in an unyielding medium, like a screw in a nut. 2. Is a cylinder 1x2 inches large enough to run a boat three feet long and about the same proportions as the Mab, described in your issue of March 20? A. Yes. 3. Of what 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 mentioned diameter? 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; but generally you must take out the board to take out the stain.

Is the following rule for finding the number of feet of board that can be sawn from a log correct? From diameter in inches deduct 4, multiply the remainder by 1/3 of itself, and multiply that product by the length of the log, and divide by 8. A. There is no rule so far as we know that is applicable to all cases.

(4) J. M. says: 1. My engine cylinder is 12 x23/4 stroke, steam pressure 25 lbs., speed 150 revolutions per minute. What is its power? A. We suppose the engine is working at about $\frac{1}{6}$ of a horse power. 2. Would a boiler of cylindrical form, with 6 flues, and a furnace of 1/4 inch wrought iron, so attached that the heat can pass under the boiler and return through the flues into the stack, do for engine use? 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. asks: What is the most effectual way of keeping chickens clean and free from vermin? A. Rub upon the roosts, once in every 3 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 solution of carbolic soap can be used on their heads which will completely exterminate the pests.

(6) W. H. says: I noticed in the SCIENTIFIC AMERICAN of February 20, 1875, a recipe for give ing an oaken color to pine (copperas, dissolved in stronglye). I did not know what kind of lev, so I slaked some lime, taking the water (after it had settled) to dissolve the copper, and applied with a brush. It was a failure. I tried potash, with no better result than to destroy a nice new brush. All this experimenting was on a new table, which my wife used to sprinkle the family washing upon. The result was that wherever a wet spot touched the table it has turned it vellow, and stained the goods with yellow spots. What is theremedy? A. Strong potash lye, or a concentrated solution of potash in water, was what is meant in the recipe. We un derstand you to say that you attempted to dissolve copper in the ley, whereas the recipe distinctly ufacture of a combined ice chest and refrigerator

said copperas, which is otherwise known as green vitriol or sulphate of iron. The wood should be steeped in the solution; and when the desired color is obtained, it should be thoroughly washed in water, dried, and varnished with shellac in alcohol. If you will send us particulars as to what you used on your table, whether solution of copper or iron, we will endeavor to help you to remove the stains 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 gun reloaded with the same amount of the same sized powder, and fired up into the air perpendicularly, when the ball comes down, would it penetrate a two inch oak board? A. It would not, as the resistance of the air would decrease its velocity.

(8) P. asks: 1. What is the essential difference between the Hirsch and Griffith screw propellers? A. The two screws differ from each other in the form of the blades and the variation of pitch. 2. What pitch should a 5 feet threebladed wheel have to give the best results? A common proportion would be to make the pitch 8 feet. 3. What would be the percentage of slip? A. With a well designed boat, there would probably be from 15 to 20 per cent of slip.

(9) B. W. asks: 1. What is the exact vari ation of the magnetic needle in the latitude of Wilmington, N. C.? A. Wedo not know that this information is published; but by writing to some of the officials of Wilmington, you may get your question answered. 2. How can I test the polarity 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

(10) H. R. W. asks: How much mixed paint will it take to the square of 100 feet surface on outside work? A. According to Trautwein, the first coat of paint will take 61/2 lbs. to the square of 100 feet, 3% lbs. to the second coat, and 3% lbs. to the third coat and each subsequent coat, the paint being white lead, and weighed be fore thinning.

(11) H. C. L. asks: If I were riding in a car going in an easterly direction at the rate of 30 miles an hour, and wanted to jump off, which would be the proper direction for jumping? A. We do not think it would make much difference which way you jumped from a car going at that rate of speed.

(12) L. W. J. asks: I have a small engine, of 11/2 inches 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 flue in the center. Diameter of shell, 15 inches: diameter of flue, 4 inches; hight of boiler, 30 inches.

(13) F. K. says: We have, for the purpose of reducing large lumps of coal into smaller, 3 sets of rolls or cylinders, studded on their peripheries with points or teeth; these have become dull in time and we desire to resharpen them. The 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 could readily be arranged to do the work. If you wish to heat the points, however, we presume you could do it most readily by the use of a blowpipe of proper construction.

(14) J. W. A. asks: In my engine, the area of plate or valve is 12x12 inches, pressure in steam chest is 100 lbs. per square inch. What amount of power is necessary to slide the plate or valve on a blank surface, the two surfaces having been planed and scraped as valves and seats are usually done? The opening under the valve in the valve seat is 1x10 or 10 square inches in area. What is the amount of power necessary to move or slide the valve covering the above opening? Which of the two above mentioned will require the least 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 ure on either valve.

(15) W.H. S. asks: 1. What is the value per cubic foot of charcoal, compared with soft bituminous (Iowa) coal, and with hard wood, for firing a steam boiler? A. Coal 1, charcoal 1/2, wood 1/2. I have an engine with a rotary or rock cutoff valve. With 100 lbs. pressure, doing heavy work, I occasionally found the valve tograte immediately after putting on tallow, which grating generally lasted about five minutes. I tried lard oil and castor oil with the same result. I tried sulphur and tallow, when the valve worked very sulphur and tallow, and found the cylinder was worn $\frac{1}{16}$ of an inch larger at the middle than at the end. Did the sulphur have anything to do with it? The valve seat, cylinder, and rings are very smooth and bright. A. It is more likely that the trouble was caused by some lack of proper adjustment.

(16) C. R. B. asks: Why is it that the yolk of an egg cannot be beaten as stiff as the white A. It is due to the fact that a large proportion of the yolk is composed of oil.

(17) O. C. B. asks: 1. I have a boiler 20 inches high by 15 inches diameter, with 27 tubes. Boiler is of 36 inch cast iron, with heads of 36 inch castiron. How much steam would it be safe to carry? 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 cylinder 11/2 inches, length of stroke 3 inches.

(18) H. S. M. says: I was recently consult ed by a friend who is about to enter into the man

in which he intends to substitute mechanical force for the usual daily supply of icc, that is, he intends to form ice in the chest by mechanical action, the motive power being a man operating, through a crank or lever, a small ice machine contained in the chest itself. The machine is to be of the ether type, in which a quantity of some very volatile liquid is made to boil in a partial vacuum. I was asked: How long will it take a moderately strong man to make 10 lbs. of ice from 10 lbs. of water at 70° Fah., providing that the apparatus be as nearly perfect as possible? I computed it as follows, and my client is of opinion that I am wide of the mark: 10 lbs. water will have to be relieved of 38° Fah. of its latent heat to reach the freezing point; and as 1 lb. of water heated 1° constitutes the unit of heat, hence $10\times38=380$ units of heat which have to be taken out of the water before ice forms at all. Then again, on the water passing from a liquid to a solid form, it will set free 140 units of heat for each pound of ice formed, and at the same time remain at the same temperature itself. Therefore $140 \times 10 = 1,400$, and 1,400 + 380 = 1,780 units of heat to be converted into mechanical force and converted back into heat in the condenser of the machine; and as every unit of heat has a mcchanical equivalent equal to raising 772 lbs. 1 foot high, we have $772 \times 1,780 = 1,374,160$ foot pounds, which, being divided by 33,000, gives 41.63, or the number of minutes during which 1 horse power is required to raise 1374,160 lbs. one foot high, or to reduce 10 lbs. of water from 70° Fah. to ice; and as it requires seven men to exert 1 horse power constantly, it will require one man seven times as long; therefore $41.63 \times 7 = 291.41 \div 60 = 4.84$ hours as the time that one man would be required to work the pump to produce 10 lbs. of ice. To this must be added 25 per cent for friction and absorption of external heat, which brings the sum total up to 605 hours. Am I right? A. The calculation is correct for the theoretical time, and is very creditable to you. It is probable, however, that still greater allowance must be made for friction, leakage, radiation, etc., than the one you have estimated.

(19) C. D. asks: By what process can I produce crystalized effects, such as we see on water coolers? A. If can be done by mixing ground mica with collodion, and applying to the sur-

(20) E. S. F. says: 1. We purchased some woodworking machinery which has been standing still for some time, and consequently has become gummed. Will kerosene oil be as good as anything to remove the gum, or had the machines better be taken all 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. Kerosene oil will not injure the journals, but the dirt and grit 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 eellar in an open vessel, will keep vegetables from freezing? It has been done here this winter with success protecting apples and potatoes from frost. A. If you will give us further particulars we will investigate the matter. We do not think the presence of the water was the preventive.

(22) H. B. says: We are making a quantity f east iron augers, about 12 inches long and from 4 to 8 inches diameter at the outside of threads. The threads are about 11/2 inches apart and of about the same depth. We wish to polish these with an emcry belt, having first removed the rough exterior by an emery wheel. Is a leather or rubber belt best? What kind of glue is best? A. Use leather and ordinary glue of good quality.

(23) D. B. C. Jr. savs: 1. I wish to build a light boat, 30 fect long by 7 beam, to draw 12 inches water. Please give mc the size of boiler, engines (for side wheels), diameter of side wheels, length and depth of buckets. A. Engine 4x6 inches, and boiler 3 feet diameter and 4 feet high. 2. Which would be the best, a side wheeler or a propeller for a stream with a rocky bottom? A. It will be best to have a propeller, or twin screws.

(24) D. W. W. asks: 1. What is the difference between plumbago and black lead? A.None. Is the mineral known as fiberous asbestos good for packing piston and valve rods on steam engines? A. Yes.

How can I make a brown or black enamel or paint, for cylinder heads and steam chests, which will not crack and scale off as common paint does? A. There is a black varnish made from mineral oil that answers very well. Seep. 379, vol. 31.

and wish to know if you can inform me why the boiler foams. I fancy that the steam pipe is too small, or possibly the boiler itself may not be large enough for the engine. The builders say that, after she has been two or three months running, she will come all right; but I find she has not improved after an experience of six weeks. A. The trouble is probably caused by dirty water. If so, blow off frequently, and clean the boiler.

(26) H.M.D. asks: Will you please tell me how soot may be used to advantage? A. Wood soot may be used as a fertilizer.

How may I get rid of the grub worm from trees 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, nitrogen 3, oxygen 9,= $C_3H_5N_3O_9$.

(27) I. W. S. asks: If I insert a platinum wire into a U-shapedtube, fill the tube with a mixture 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 one, and has large openings at the mouths, it will

How 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 and mix a little refined sugar with it.

- (28) G. A. Z. says: I am working an improvement 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-plated brass would be the better for this purpose.
- (29) G. B. B. asks: In your formula for amalgam for silvering hollow glass vessels, etc. what qualities of lead and tin are meant? A. Melt together 1 oz. clean lead and 1 oz. fine tin in a clean iron ladle, then immediately add 1 oz. bismuth. Skim off the dross, remove the ladle from the fire, and before it sets add 10 ozs. quicksilver. Now stir the whole carefully, taking care not to breathe over it, as the fumes of the mercury are very pernicious. Pour this through an earthen pipe into the glass globe, which turn repeatedly round.
- (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 placed behind? A. There would be little, if any, difference.
- (31) B. C. & Co. ask: How can I separate tin from dross? A. The tin is melted and the temperature raised very considerably in order to render 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 which it is skimmed, and poured into cast iron molds.
- (32) E. F. H. asks: 1. Which are the best metals for large stencil plates? A. Thin hard brassis the best for this purpose. 2. Can acids be successfully used for this purpose? A. No.
- (33) S. R. C. asks: In dyeing with aniline colors, what can we use to set the dye on cottons, woolens, and silks? A. Perkin uses tannin as a mordant for fixing the colors upon cotton and calicoes, 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 dyes from their aqueous (but not acidulated) solutions readily at a temperature of 1:23° to 140° Fah. In the case of silk, all that is necessary is to steep it in the solution (the solvent being either alcohol or wood spirit) until the desired color is obtained.
- (34) A. B. R. says: I have had 750 barrels of old cider on hand for three years. How can I turn it into vinegar? A. Add to each 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 on to it a cock and a nipple, and put a certain amount of chemicals into it, set it on the fire and make the gas without letting it out of the bottle. In other 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 yield too heavy a strain? I put in just half of the above quantities and screwed on the bottle a steam gage. It brought the gage up to 170 lbs., and would have gone higher, but I felt a little timid, and unscrewed the gage, and allowed the gas to escape. The bottleis 12 inches high and 5 inches in diameter, and about half an inch thick, outside measurement. A. As the volume 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 21/4 cubic feet. The question is not what pressure the bottle will stand when cold, but 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 figurcs. Your experiment was a very rash one, as many serious and some fatal accidents have occurred, to our knowledge, from like experiments. Besides, so small a quantity of gas (if used for the lime light) would last only a very short
- (36) G. K. says: I want a cement that will harden in 45 hours or less, to be of the consistence of molasses. It is to be used to cement sandstone under salt or fresh water. A. Usc Portland
- (37) E. E. S. asks: 1. What should be the relative diameters of the wheel on crank shaft the pulley on saw arbor, and of the saw, in order to obtain the best effects in a foot power circular saw? A. We could not tell without knowing more particulars: but you will find a number of such machines in use, and you can observe their proportions. 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 device you describe.
- (38) G. L. N. asks: How can I deodorize kerosene oil? A. Digest it with chloride of calcium. 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? A. Try dammar varnish.
- 1. What are the extra currents of electricity? natural color? A. It cannot.

A. If a closed circuit traversed by a voltaic current be opened, a scarcely perceptible spark is obtained, 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 perceived unless the current is very intense. If, on the contrary, the wire is long, and especially if it makes a great number of turns, so as to form a bobbin with very close folds, the spark, which is inappreciable when the circuit is closed, acquires a great intensity when it is opened, and an observer in the circuit receives a shock, which is the stronger as the number of turns of wire increases 2. What causes the electric light, and why can it not be used for illumination? A. The heating of the poles is due to the great resistance which the electric current encounters at these points, the carbon composing which is converted into vapor by the intense heat, forming a conducting bridge cross 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, explained above. 4. Has there ever been patented an automatic repeater with simply two relays?

- (40) E. A. W. asks: What is absinthe? A A cordial of brandy, flavored with wormwood.
- (41) R. G. asks: Can you give me a practical 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 in solution, is then drawn off and concentrated by evaporation. If the heat be continued to a point little short of redness, the liquid flows without ebullition, and may then be run into molds, where it solidifies on cooling, forming the small, grayish white sticks of commerce. The ves sels used are either iron or silver.
- (42) T. S. R. asks: Does it require more power to run a four-blade propeller than a two blade, the size being the same? A. Yes.

What is the best for an engine making 300 revo lutions per minute, the propeller being 28 inches in diameter, and the engine 31/2 x5 inches? A. The four-bladedscrew will utilize most of the power

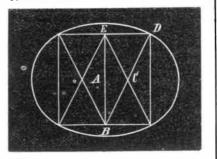
- (43) W. M. asks: What ingredients will prevent the explosion of coal oil, and not impair the light when used in lamps? A. We can give you no better recipe than that of distilling off the lighter portions of the fluid until the specific gravity of the remaining portion is about 0.75 to 0.80.
- 1. How can I clean and polish window panes mirrors, etc.? 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 spirit of wine. Rub it over the glass, which immediately dust over with whiting sifted through 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. Use a 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. asks: 1. What proportion to the periodic time of the heavenly bodies would be the time in which they would fall to the center of force, supposing the tangential force suddenly destroyed? A. The planets will reach the sun with the same velocity spirally as if they fell direct. 2. If two masses, each of which would attract to 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 electromagnet? A. Wind insulated copper wire 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 if the object is to raise heavy weights. The question as to how much a magnet containing 10 lbs. wire would be capable of raising could not be tery is to be used.
- (46) D. L. M. asks: 1. What is the difference between clock time and mean solar time, and why 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 longitude. 2. Is the direction of the earth's axis to its orbit always in the same direction? A. The direction of the earth's axis is nearly uniform.
- (47) L.E.O.asks: Will an anode composed of nickel five cent pieces answer for nickel plating on a small scale? A. Yes.
- (48) G. C. P. Jr. asks: 1. What is the best way to make a solution of rubber? A. By far the best solvent for rubber is bisulphide of carbon. 2. Is it safe to heat naphtha over a spirit lamp to boiling heat? A. No; the naphtha may be heated by immersing the vessel containing it in hot water or hot sand. This had better be done in the open
- 1. What is the best method to adopt in order to polish amber tortoiseshell? A. Use putty powder. 2. When is is faded, can it be restored to its

Of what is fool's gold composed? Is it of any value? A. It is a compound of iron and sulphur, Fe S_2 , and is of considerable value as a source of sulphur in the manufacture of sulphuric acid.

- (49) C. D. H. asks: 1. In the construction of an induction coil 3 feet long, is it better to use a number of iron wires or a bar of iron for the core? A. Use a bundle of iron wires. 2. How large 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 for primary and silk for secondary. 5. What is the best material for ends of the coil? A. This is immaterial. 6. What amount of battery would be required for a speciific length of spark? A. Six cells will give a ten inch spark. 7. Would it do for an electric light?
- (50) C. W. asks: 1. How can I make was ter colors in small cakes? A. Mix the colors into a thick paste with hot water containing a little gum arabic, and press into molds. 2. How can I make plumbago or black lead into cakes? A Where pieces of sufficient size are obtainable, they may be sawn into the required shape. When in powder, it may be incorporated with a very small quantity of melted sulphur, or moistened with water and subjected to great pressure, when it coheres.
- (51) W. L. D. asks: How can I make the linking rings which sleight of hand performers A: We are not acquainted with the manner use? in which these tricks are executed.

Can a person charge himself with electricity A. Yes, by means of an electrical machine.

(52) H. C. N. says: I believe that the following method of drawing an oval is superior to many, and it draws a perfect oval. Take any



square, bisect it, and draw diagonals in the halves of the square. Describe the oval with the compass, 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 wears out, turn it over.
- (54) T. W. D. says, in reply to J. H., who asked for a process in which to dye the skins of small animals, such as muskrat, mink, etc.? The green 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 and the juice squeezed out from the pulp, with the addition of a little water. A small quantity of lime is added, and the dye is ready for use. The color is extremely difficult of extraction, and attaches itself very readily to any kind of hair, and itis used extensively as a hair dye. The coloring matter consists essentially of a soluble alkaloid lately inestigated and known as regianine

MINERALS, ETC.—Specimens have been receivedfrom 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 iron pyrites.-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 arsenic 46 percent, 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 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. 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. 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 vellow oxide of iron. No. 20 is compound crystals, containing the cube, octohedron, and rhombic dodecahedron of iron pyrites.-I. F. D.-Nos. 1 and 2 contain some 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 alumina. The darker specimen was colored with oxide of iron. They both contained phosphoric acid, No. 2 having the larger percentage; and any 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. No. 5 is hornblende.—D. K.—Nos. 1 and 4 are sulphuret of iron in quartz and pyroxene

lime, and magnesia, with some oxide of iron, but not sufficient for extraction. No. 3 shows shining scales of biotite, a variety of mica, and the remainder is a mixture of quartz and felspar. No. 5 is not metal, as you say. It is a partly reduced sulphuret of iron, exceedingly brittle from presence of excess of sulphur.-H. W. F.-It is pyrrhotite 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 carbonate of lime, and may have come from the skeleton or shell of some animal.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN ACknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On a New Numerical System. By F. E.
- On the Sun's Orbit. By J. H. On Stationary Engines. By J. C. G.
- On the Currant Worm. By C. T.

Also enquiries and 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.—

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentab'ilty of inventions, assignments, etc., will not be published 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; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following arc sent: "Who makes good washing machines? 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 sells the best bone-crushing mill?" All such personal inquiries are printed, as will be observed, in the column of "Business and Perwhich is specially set apart for that purpose, subject to the charge mentioned at the head of that Jolumn. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

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