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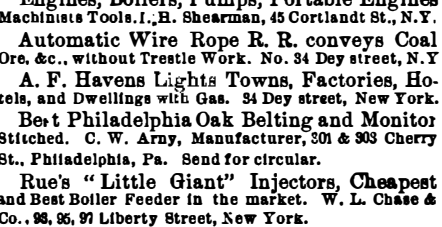
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ANSWERS TO CORRESPONDENTS

A. B. E. L. will find directions for making vinegar on p. 58, vol. 30. Eggs can be preserved by the process described on this page. This also answers L. G. M. will find a recipe for dyeing silk black on p. 89, vol. 26—H. C. H. can tin cast iron by the process detailed on p. 212, vol. 26.—J. B. E. should try a quick drying oil paint for his varnished thread.—J. F. should read our article on p. 64, vol. 30, on "Indicating Steam Engines."

—A. R. and F. H. should address such queries to engine manufacturers.—C. M. can transfer engravings to metal by the process of transferring to wood, detailed on p. 193, vol. 30.—L. E. B. will find a description of a bone fertilizer on p. 193, vol. 29, and p. 143, vol. 30. For mills see our advertising columns.—L. M., E. W. M., and C. H. F. will find the particulars of the offer of a premium for a car coupling by the German railway confederation on p. 162, vol. 30.—C. A. S. can mold rubber by following the directions on p. 283, vol. 29.—X. L. C. R. S. T. should send his name and address.—H. & B. will find a recipe for aquarium cement on p. 90, vol. 30.—R. F. will find directions for constructing a sun dial on p. 409, vol. 30. A sun dial shows solar time, which must be corrected for mean time by the fast and slow tables published in most almanacs.—H. B. B. will find directions for exterminating ants on p. 234, vol. 27.—G. E. F. should consult the booksellers who advertise in our columns.

M. E. T. asks: Is the force of the powder destroyed by putting tissue paper between the ball and the powder? A. No. 2. What is the *modus operandi* of loading a pistol and catching the ball in the teeth? A. A peculiarly constructed pistol is used. 3. Would an invention for coupling freight cars when standing on the top of the car be of use? A. There is always room for a valuable improvement in any department.

J. S. F. asks: Ought there to be any difference in the capacity for pulling between two locomotives, one having a 24 inch and the other a 20 inch stroke, the cylinders being of such diameters as to contain the same number of cubic inches, the valve motion in each being proportional to the stroke, but being alike in every other particular? A. Yes, if steam pressure, piston speed, and other particulars were the same in both engines.

J. S. asks: What is the best non-conductor of magnetism? A. An interval of space.

W. P. says: I have a boiler 24 feet x 42 inches. Water is supplied by an injector. I wish the water to go into the boiler hotter; it takes 50 lbs. of steam to keep up a supply of water. Would it be practicable to run the water from the injector through a coil into a heater, thence to the boiler, and would it require more steam, or would the heater aid the injector? A. Your injector cannot be in very good order, if it will not work with a lower pressure of steam. You do not send enough data to enable us to answer your question definitely. If the use of the heater causes additional back pressure in the engine, it will be a question, to be determined by experiment, whether the heater is economical or not.

J. H. K. asks: How can I estimate the pressure of a column of water 26 feet high? A. Divide the head of water in feet by 2.3, and the result will be the pressure in the base in pounds per square inch.

W. C. S. asks: 1. In the bursting of a steam boiler, where the top of the boiler is thrown off, does all the water instantly flash into steam? If not, does the water that remains in the boiler instantly cool down to 212° when the pressure is removed? A. A large portion of it would suddenly be converted into steam, which might carry off the remaining water mechanically. 2. What is the temperature of water in a boiler working under average pressure? A. Between 300° and 350° Fah.

B. R. K. asks: Where and by whom was the first steamboat made? A. There are authentic accounts of experiments with small steam vessels in Europe, as far back as 1698. The first practical steamboat, on the authority of Mr. Woodcroft, was the Charlotte Dundas, built by Symington of England, in 1801. Regular steam navigation, that is, the running of a steamer regularly, carrying passengers and freight, was effected in America in 1807, by Fulton, and in England, in 1812, by Bell. You will find these facts, and many others of interest in this connection, impartially stated, and in general well authenticated, in Woodcroft's "Sketch of the Origin and Progress of Steam Navigation."

F. H. asks: Why is a common flat iron called a sad iron? A. Possibly from an old north of England word "sad," applied to anything heavy.

B. asks: How can spiral steel springs made of bars 1/2 an inch square be galvanized without destroying the temper? What would be the result of hardening the springs before galvanizing, and upon withdrawing them from the galvanizing bath and plunging them into cold water? Would this harden them if not previously hardened, the heat of the galvanizing tank being probably under 700° Fah.? Could the temper afterwards be drawn to the requisite point, and if so, by what process? A. We think the best plan would be to plate them by means of a battery.

B. W. asks: Can you inform me how Philadelphia ice cream is made, and why it is different from Boston ice cream? A. The difference is due to the fact that genuine Philadelphia ice cream is made out of the purest and richest materials.

J. B. E. asks: How can I dye ivory and get a nice clear red color? A. Use bichloride of tin for the mordant. After having steeped the ivory in this a short time, immerse in a hot solution of Brazil wood or cochineal.

E. H. M. asks: How are toy balloons made? Are they of India rubber or gun cotton? A. The rubber bags are imported from Paris, and they are merely filled here with pure hydrogen.

E. L. asks: How can I prepare paraffin which melts at a temperature of from 95° to 100° Fah.? A. By removing in the course of the distillation those hydrocarbons of the paraffin series which have a lower melting point.

J. B. H. asks: 1. Is there any cure for hydrophobia? What is the best thing for a person to do when bitten by a mad dog? A. The victims are commonly treated by dosing with whiskey. 2. What can I do with my dogs to prevent them from going mad? A. Tie stones around their necks and put them under water.

B. & S. say: We are running a 10 x 18 inches engine at 220 per minute, with a tubular boiler 12 feet long and 32 inches in diameter. The average pressure of steam by gage is 80 lbs. We take the steam from a cast dome with a safety valve on top; the orifice in boiler for dome is 5 inches in diameter, the steam supply being 2 1/2 inches. The boiler foams very much, running mud and dirt through engine, cutting valve, valve seat, and cylinder rings out in a few days' run. One party says that if we put on a steam dome 24 inches in diameter and take steam from that, it will obviate the difficulty. Is this so? Another says that a surface blow-off will be all that is needed. A. You do not send quite enough data. It would seem, however, that the orifice in the boiler for the dome is too small. We think it quite probable that a larger dome, properly connected, would remedy the trouble to some degree. But we think it would be desirable for you to get a feed water heater (of which there are several in the market) that will remove the greater part of the dirt from the water before it goes into the boiler.

W. F. S. asks: Which is the best form, for accuracy, for the inside of a spirit level tube? Should it be a right line or a curved one? A. It is necessary that the tube should be curved.

E. W. S. asks: Will you give me the philosophy of "blowing up"? If a person lies down on his back, upon the floor, holds himself perfectly stiff, crosses his hands so as to get his arms out of the way, and inhales all the air he possibly can; and three, four or more persons stand around him and at a given signal all raise their arms and take a full breath, then lower their arms, at the same time expelling all the air from their lungs upon the person lying upon the floor: with their index finger they can quickly raise him as far as they can reach. A. We think that the blowing up process is chiefly efficacious in making all the lifts intersect in union. It must be evident that if four persons lift a man, each one sustains about one fourth of the weight upon one finger; so that, if this weight is not perceptible, it would seem to be due to the imagination.

N. F. A. asks: What is the best for a person to read for general improvement? A. It would be well for you to get a reliable cyclopaedia, which will be a very good work for you to read, for useful information. You will find in it replies to most of your other questions, which are quite similar to many that have recently been answered in our columns.

S. H. asks: 1. What should I read besides the Scientific American in order to know what has been invented or discovered in any particular line? A. The patent records of different countries. 2. Is there a reward offered for plans to improve the mouth of the Mississippi? A. No. 3. Suppose that a pair of birds were placed so that they could not see other birds of their kind. Would such birds build nests like their parents? If so, what is the philosophy of such knowledge? A. They would. The philosophy of their action we cannot explain. 4. Can iron be melted by run glasses? Why are not such glasses more in use for heating purposes? A. Yes, but it is not generally a convenient method. 5. What will prevent magnets from attracting iron? A. We do not know of anything. 6. Will magnets wear out? A. Yes.

C. S. A. asks: 1. Which is the stronger, wire rope or the same weight of iron made into a solid rod of the same length? A. The former. 2. Is there any substance that will make more gas, at a less cost, than ordinary blasting powder? What will make the most gas in the shortest time? A. These questions are too indefinite.

E. asks: Why are gunpowder engines not in general use? A. Gunpowder engines are too expensive to run to compete successfully with steam engines.

F. H. T. asks: Is there a substance (produced in making gas from coal) which is somewhat like lime and is composed in a great part of carbon? A. No. 2. Is there a process for plating steel on cast iron? A. We never heard of any.

J. H. A. asks: Is there any law that requires a man who runs a steam fire or stationary engine to have a certificate? A. There is no United States law. Most States, however, have local laws on the subject.

F. C. S. asks: What examination must a person pass to get a license to run an engine? I have made the steam engine a study, and feel convinced that I could run one and take good care of it, but I hear that examiners often try to confuse young applicants. A. The laws vary somewhat in the different States. But so far as we know, the examination required for license to run a small engine relates principally to the care and management of the boiler.

P. S. S. asks: Is Cornell University a good school for mechanical engineers, and, all other things being equal, would it be more advantageous for me to go there and study for a mechanical engineer than to enter some first class machine shop? A. You will need instruction at such a school, and practice in the shops also. We think it would be well for you to take such a course first.

J. M. asks: Are there any high pressure engines on steamers running between Liverpool and New York City? A. No.

W. S. D. says: How can I make a glass globe into a globe mirror? A. Melt together 1 oz. clean lead and 1 oz. of 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 together taking care not to breathe over it, as the fumes of mercury are very pernicious. Pour this through an earthen pipe into the glass globe, which turn repeatedly round.

J. B. S. says: 1. I have a four inch whistle, which, when set at its highest pitch, does not give satisfaction. I propose to put a trumpet on it; of what material should it be made? Will galvanized iron do, or tin, if painted? A. Galvanized iron will answer, but the best material is brass. 2. Should the small end be closed? A. By all means close the small end. 3. How close around the whistle should it fit? A. If we fully understand your question, the closer the fit the higher will be the pitch.

H. P. asks: Why is it that pork shrinks from the bone when boiled, if it is killed in the decrease of the moon? A. This is a popular fallacy.

J. R. L. asks: Would it be practicable for an amateur tourist in a trip around the world to use to advantage photographic implements and materials, instead of sketching, for the purpose of securing pictures of the objects of interest and beauty he might meet? Would it require special care and arrangements to adapt such pictures to the stereoscope? A. There is a great number of amateurs, who travel to every part of the world and take excellent photo pictures, and that too with all their apparatus contained in a box no larger than a small valise.

R. A. asks: Is water an element in a scientific sense? If not, what combination is it? A. Water is a compound of two elements, oxygen and hydrogen, in the proportion of 8 parts by weight of oxygen to 1 part by weight of hydrogen.

W. D. S. asks: 1. How can I make the green and the gold lacquer with which lacquer clocks, and how is it applied? A. For gold lacquer, take of seed lac 6 ozs., amber and gum guttae, each, 2 ozs., extract of red sandal wood in water 24 grains, dragon's blood 60 grains, oriental saffron 36 grains, pounded glass 4 ozs., pure alcohol 36 ozs. Grind the amber, the seed lac, gum guttae, and dragon's blood on a porphyry; then mix them with the pounded glass, and add the alcohol (after forming with it an infusion) and extract of sandal wood. The varnish must then be completed as before; the metal articles are heated, and those which will admit of it are immersed in packets: the tint of the varnish may be varied by modifying the doses of the coloring substances. For green, use any green transparent vegetable color, mixed with the above. 2. With which cement can I mend glass ware? A. Use diamond cement. 3. What mixture can I use to stop cracks in walnut furniture? A. Take equal parts of beeswax and sealing wax and mix them by melting them together, or dissolve in alcohol. Color with amber. 4. How is the gilding done on toilet sets and on furniture? A. Use yellow shellac varnish in the desired pattern, upon which lay the gold leaf.

C. H. M. asks: Which is the healthiest State in the Union? A. That State in which the greatest regard is paid to religion, law, and education. In respect to physical advantages, most are in the first rank.

G. D. F. says: Water boils at the sea level at 212°. Here in Argenta, Montana Territory, it boils at 200°. Does the altitude affect the degree as marked on the thermometer, or is it the pressure of atmosphere only which affects the boiling? A. Water does not boil until the tension of the vapor formed by heating it is greater than the atmosphere's pressure. At the sea level, where the pressure of the atmosphere is about 15 lbs. per square inch, the water must be heated to 212° before its vapor has sufficient tension to overcome this pressure. At Argenta, where you are so much above the sea, and have a much less depth of atmosphere above you, the pressure is not so many pounds, and the boiling point is correspondingly lower.

H. W. G. says: 1. Please give me the analysis of crude carbolic acid or dead oil. A. Carbolic acid consists of 12 atoms of carbon, 6 atoms of hydrogen, and 2 atoms of oxygen. The less volatile portion of the fluids produced by distillation of coal tar contain considerable quantities of this substance. It may be extracted by agitation of the coal oils (boiling between 800° and 400°) with an alkaline solution. The latter, separated from the undissolved portion, contains the carbolic acid in the state of carbonate of the alkali. On addition of a mineral acid, the carbolic acid is liberated, and rises to the surface in the form of an oil. To obtain it dry, recourse must be had to distillation with chloride of calcium, followed by a new rectification. If required pure, only that portion must be received which boils at 370°. Commercial carbolic acid is generally very impure. Some specimens do not contain more than 50 per cent of acids soluble in strong solution of potash. The insoluble portion contains naphthalene, fluid hydrocarbons, and small portions of chinoline and lepidine. 2. Are there any fertilizing properties in it, and if so in what proportion? A. We have never heard of its use as a fertilizer.

J. J. asks: Is there any substance that can be used as a flux in melting iron, that will answer as a substitute for limestone? A. Other substances, like caustic soda or fluor spar, can be used, when certain objects are to be obtained.

L. H. says: On p. 267, vol. 20, one per cent of carbolic acid is recommended for removing green moss from brown stone stoops. How much is that to a quart of water? I have a house with white marble stoop, sills, etc. Will the above remove the discolorations, also the iron rust? A. Seventy-five grains to a quart. It will partly remove the discolorations but not the iron rust.

J. R. S. asks: Can you tell me how glass is made for a microscope? Can I melt and pour it into a mold? A. You could not make a lens suitable for optical purposes by melting glass and pouring it into a mold. Glass for such purposes has to be of wonderful uniformity of structure, and ground with exquisite care.

R. I. B. asks: 1. How can I dissolve common india rubber and then restore it to its former hardness? A. Cut 2 lbs. of caoutchouc into thin, small pieces; put them in a vessel of tinned sheet iron, and pour over 12 to 14 lbs. of sulphide of carbon. For the promotion of solution, place the vessel in another containing water previously heated up to about 86° Fah. The solution will take place promptly, and the fluid will thicken very soon. 2. Is there any chemical that will curl human hair without injuring it? A. We do not know of any.

A. C. R. asks: 1. Is electricity instantaneous? A. No. Its velocity is 288,000 miles per second. 2. If two bodies, one heavy and one light, are dropped from a tower or any high point, which of the two will strike the ground first? A. If the bodies are the same in exterior size, the heaviest body will first strike the ground.

J. G. asks: I. How can I make an electrical condenser? A. With sheets of tinfoil. They are fastened on two sides of a band of oiled silk, which insulates them, forming thus two coatings; they are then coiled several times round each other, another band of silk being interposed between them. 2. How is the induction coil connected with it? A. One of these coatings, the positive, is connected with the binding screw which receives the current on emerging from the primary wire; and the other, the negative, is connected with the binding screw which communicates with the commutator and the battery. 3. In Mr. A. Ladigian's electric lamp, with only 1 carbon point, what gas does he supply after having exhausted the air from the tube? A. Pure hydrogen will answer. 4. If I connect one wire from the machine with the carbon, what must I do with the other wire? It stands to reason the current will not flow if the circuit be not complete. A. Connect your wires to either end in such a manner that the carbon completes the circuit with both poles of the battery.

G. S. T. says: I recently found that a lightning rod vendor was using for conductors tubes made of corrugated thin sheet copper, and that he attached them to buildings by nailing strips of sheet zinc around them instead of passing them through glass insulators, claiming that, though glass when dry might be so used, yet when wet, it was of little value and not to be relied on. Is this so? A. Insulators are of no use. The method of attachment described is correct. The important thing applying a lightning rod is to have a large extent of conducting material at the base or terminal of the rod to the ground. See reply to another correspondent last week.

G. C. R. asks: How are the aniline colors said to be procured from coal tar made? A. Coal tar colors are made from aniline, carbolic or phenic acid, and naphthaline, bodies obtained directly or indirectly from the distillation of coal. The reds, such as magenta, are obtained by the action of bichlorides of carbon, tin, or mercury on aniline, and the purples, such as mauve, by the action of oxydizing agents, as bichromate of potassa.

S. G. Jr. asks: How is the beautiful crystallization upon water coolers and on brass mathematical instruments produced? A. By exposing the metallic surface for a few moments to nitric acid.

G. E. P. asks: How can glucose be distinguished from cane sugar? A. The easiest method is by the saccharimeter.

B. W. M. asks: 1. What is the alloy for white metal for harness castings? A. Melt together 1 lb. brass, 1 1/2 ozs. spelter, and 1 oz. tin. Your other question is illegible.

J. E. L. asks: What will keep Russian iron from rusting and becoming discolored during the summer season? A. Immerse in a strong solution of carbonate of soda, out of contact with air. Or coat thoroughly with black lead and keep in a dry place.

D. asks: What colored veil will afford the best protection to the complexion? Of course an immediate solution would be furnished by a knowledge of the colors which intercept in the greatest measure the actinic or chemical rays of the sun. I know that yellow possesses this power pre-eminently, but as it is a hue which would scarcely be tolerated for the purpose of a veil, I would like to know whether there is any less vivid tint which could be used with similar effect. Blue must be particularly injurious, judging from the fact of its invariable use as a shade to photographers' skylights where the transmission of the actinic rays of the sun is absolutely indispensable. Please also state the effect of the gray veils now so much in use. A. The gray veils will probably serve as well as any for obtaining the object desired.

E. P. H. asks: Can you give a recipe for the manufacture of a sympathetic ink which will fade completely in a short time after being developed, and which cannot be re-developed? A. There is no ink fulfilling all these conditions.

O. F. M. says: I have set up a page of type and I would like to take a stereotype or electrotype plate from it. How shall I proceed? A. To stereotype: Paste together a piece of tissue paper and a piece of printing paper, and lay on the type (with the tissue paper next the metal) which must be well oiled. Cover the paper with a damp rag, and beat on to the type evenly with a hard brush; then add three other thicknesses of soft paper, pasted, and beat as before after adding each piece. Backup with stiff paper. Dry under a moderate heat, and take off the paper mold. You can readily arrange this mold for casting, but a metal matrix, properly constructed, can be cheaply obtained. To electrotype: Take a cast in plaster of Paris, brush plumbago into the matrix, and plate in a copper galvanic bath in the usual way.

A. B. asks: 1. Why does lime water, when breathed on, become opalescent and white, like milk? A. Because the breath contains carbonic acid, and the carbonic acid unites with the lime to form carbonate of lime or chalk. 2. What is photographers' paper made of, and why does it become black when exposed to the light? A. Because it is covered with a wash of chloride of silver, which blackens by exposure to the light.

S. asks: 1. What would be the temperature of a body in space, removed from the influence of the sun? A. The absolute zero is estimated to be -490° Fah. 2. How can common factory cotton cloth be rendered waterproof and transparent, to be used instead of glass for protecting plants? A. Try Canada balsam and rectified turpentine, equal parts. 3. Can chronic dyspepsia be cured? A. Yes.

G. S. B. says: I am constructing a machine in which I require to use an electric spark, and will have but a small place to spare on my machine for it. What can I use to give me a spark that I can conduct to the end of a rod on the principle of the electric gas lighter? I prefer something that will work promptly with very little friction, and that can be made cheaply. What two bodies brought in contact by friction will be cheapest and give the largest spark? A. Attach a shallow cup of brass on the under side to a copper rod of the required length; the end from which the spark is to be drawn should be sharpened down and tipped with platinum. In the cup place a smooth tight-fitting piece of hard rubber; for your movable disk use buckskin conveniently stretched and mounted. Fine oiled silk may be used in place of the buckskin. This answers both questions.

M. O. M. O. B. says: I wish to study mineralogy. What work would be the best for a beginner? A. Dana's "Mineralogy" is the standard work. See our advertising columns for booksellers' addresses.

L. says: 1. F. H. H. asks why does water form an exception to the law of contraction by cold. I would ask, does it? A. It contracts until the temperature has fallen to 39° 4', and then expands until it has reached the freezing point, and is converted into ice. 2. A stone jar filled with melted lard and kept until cold was found to be cracked from top to bottom. Was it the expansion of the lard, or was there a chemical or mechanical mixture of water sufficient to cause the bursting of the jar? A. The jar was cracked by the cause above named.

C. L. asks: What is the best method of preparing a composition for plating metals with gold? A. The best method is that of electro-plating. For plating without a battery, see p. 331, vol. 30.

A. W. M. asks: 1. What must be the length of the rafters of a house, so that the shingles may last as long as possible, the width of the house being 40 feet? A. About 28 1/2 feet will answer very well. 2. In a combination of movable pulleys, the inclination of the ropes being at any angle, required to find the power, the weight and the number of pulleys being given? It is understood that the ropes are not parallel, and that there is more than one pulley. A. In such a case the relation between the power and weight will generally vary at every position of the weight, since the angles of the cords will be continually changing. But the relation can be found for any position, by calculating the relative distances moved over by the power and weight for a slight displacement. 3. The area of the piston of a high pressure engine is 1,200 square inches, the length of stroke 3 feet, and the pressure of steam upon the square inch of the piston is 32 lbs., the number of strokes per minute being 18; required the number of cubic feet of water which the engine will raise from a mine 350 feet deep, the friction being 1 lb. per square inch plus the pressure of the atmosphere? A. You will find answers to this question on p. 64, vol. 30, on indicating steam engines, and on p. 48, vol. 29, on the friction of water in pipes.

G. S. D. says: A friend of mine bought a ring, with a stone in it called aquamarine. The stone is cut like a diamond and is very clear; it cuts glass, but not very well. What is the value of the stone? It is about the size of an ordinary white bean. A. The name of aquamarine is applied to a bluish green variety of beryl, on account of its resemblance to the color of the sea. If it is a genuine aquamarine, it ought to scratch glass readily.

W. B. P. asks: 1. How can I make a hydro-electrical machine? A. Use a small steam boiler, insulated from the ground by glass pillars. The steam is allowed to escape from a number of jets against a number of sharp metallic points. 2. Will such an apparatus make chemical decompositions? A. No. 3. Suppose I have a battery of copper and zinc, and instead of joining copper to zinc, I join copper to copper and zinc to zinc; would it not make a quantity current, joining in the usual way making an intense current? A. Yes. 4. Will it impede heat and sound; will it impede light? A. It will not impede light. 5. How can I obtain oxygen from the oxide or sulphate of oxide of zinc? A. It could not be obtained from either in an uncombined state. 6. Would clay or brick be porous enough for the porous cup in a voltaic battery? A. No; besides, the acid would act on it. 7. If I nail the copper and zinc together on a piece of dried wood, would the battery work? A. Yes, by running a wire from one to the other so as to complete the circuit. 8. How can I make a crucible out of bone ashes? A. By compressing the bone ashes into a mold of the desired form. 9. In what number of the SCIENTIFIC AMERICAN was that recipe for mending rubber boots? A. See p. 203, vol. 30. 10. Will rubber tubes do to convey chlorine? A. Yes, but they are rapidly decomposed. 11. Which will break the quickest by heat, thick or thin chimneys for lamps? A. Thick ones. 12. Can I prepare oxygen from the specimen I enclose? A. Your specimen is oxide of zinc. See answer to No. 5. 13. Are not chlorhydric and hydrochloric acids the same as muriatic acid? A. Yes. 14. Are potash and potassa the same, and their salts, such as chlorate of potassa and chlorate of potash, identical? A. Yes.

H. T. H. says: I have a roof covered with canvas that was painted several years ago. The paint is broken in many places, and I wish to remove the old paint. How can it be done without damaging the canvas? A. Use benzine.

N. P. L. says: I have an overshot water wheel which does not give as much power as I want. Can I put in an engine, and belt on to my main shaft to run with my wheel without having the speed of both regulated alike? Will the engine assist the power of the wheel without both running at the same speed? A. It would be better to arrange the engine so as to drive a portion of the machinery separately.

R. A. says: I am building stationary engines which are used for saw mills, etc., and I am troubled with their pounding. They strike hard on turning the centers. A. We could not tell you the remedy without a personal examination. An experienced engineer could readily find the trouble and the means of preventing it. 2. Can you recommend a good practical book on the construction of modern stationary engines adapted to saw and grist mills, etc.? A. There is no book published such as you speak of. It has yet to be written.

R. F. B. P. asks: Is a man who uses his right hand at end of the ax, shovel, or sledge hammer, and his left applied to the center of the handle, a right or left handed man? A. Right handed.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined with the results stated:

A. H. S.—Two are iron pyrites. One is copper pyrites.—C. S. & F. O. S.—It is magnetic oxide of iron.—

H. M. F.—The little scales are kaolinite, which is a hydrous silicate of alumina.—A. S.—The stone is valuable for some purposes. It is found in quarries.—F. C. K.—It is galena or sulphure of lead, and contains 87 per cent of lead.—J. S. N.—It is iron pyrites, and is not worth working as an ore of iron.—R. W. Z.—No. 1 is banded argillite or clay rock. No. 2 is micaceous oxide of iron. No. 3 is actinolite, a silicate of magnesia and lime.—W. F. S.—Partially decayed wood, covered with a variety of vegetable mold.—E. P. H.—It is a fine clay containing a large amount of hydrated yellow oxide of iron. It would probably repay you to have the numerical percentage of iron determined, as it would be necessary to do so before its market value could be determined. A. M. B.—It is fibrous selenite, which is a native crystallized sulphate of lime.—J. S. W.—It is a fine sand, and might be advantageously used in some cases as a polishing powder.—R. M.—It is not iron pyrites. It is blende or sulphure of zinc.—J. D. W.—They are small crystals of quartz. When of large size and perfect, they are interesting as mineral specimens, and, when cut, are of some value as ornaments.—W. F. S.—No. 1 & 2 are very impure limestone. If polished, they might answer for ornamental purposes. No. 3 is a variety of pipe clay. No. 4 is gray clay.—W. P. B.—No. 1 is a variety of kaolin. No. 2 did not come to hand. No. 3 is crystallized carbonate of lime or calcite.—G. M. R.—No. 1 is greenstone. No. 2 is iron pyrites and galena. No. 3 contains blende or sulphure of zinc. No. 4 is decomposed talcoid schist. No. 5 is carbonate of lime and iron. The last, if in sufficient quantity, might be used in iron manufacture.

E. F. T. asks: How can I print on gelatin?—J. E. B. asks: What is the best stain for staining popular cigar boxes?—H. M. G. asks: How can I smoke buttons?—S. V. asks: What will remove wall paper that has been put on with gum arabic dissolved in vinegar and copal varnish, without staining the paper?

COMMUNICATIONS RECEIVED.

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

- On Eremacausis and Cremation. By H. H.
On a Curious Freak of Nature. By C. H. M.
On a Californian Chute. By J. J. G.
On the Sun's Attraction. By W. B.
On Gravitation. By H. B. W.

Also enquiries and answers from the following:

- H. B. B. L. V.—J. F.—G. B. S.
Correspondents in different parts of the country ask: Who sells the best drawing instruments? Where can boys' chemical apparatus be obtained? Who make card railway tickets, as used in Europe? Makers of the above articles will probably promote their interests by advertising, in reply, in the SCIENTIFIC AMERICAN.
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.
Several correspondents request us to publish replies to their enquiries about the patentability of their inventions, 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 manufacturers, 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.

[OFFICIAL.]

Index of Inventions

FOR WHICH

Letters Patent of the United States WERE GRANTED IN THE WEEK ENDING

May 5, 1874,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

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