Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed Four Lines, One Dollar and a Half per Line will be charged.

Notes & Queries

A. J. W. can harden tallow by using the the recipe on p. 202, vol. 24.—J. K. can preserve wood from decay by the process detailed on p. 319, vol. 31.—A. F. will find a description of the hydrogen lamp on p. 242, vol. 31.—R. H. is referred to p. 48, vol. 29, for a formula for calculating the friction of water in pipes.

(1) J. B. asks: Is there any chemical that will cause the hair and fleshings from hides in a tannery to decompose in three months? A. Try caustic ley.

(2) W. M. D. asks: 1. Is the word ohm used to signify a unit of electric force, or is it a term applied to the resistance of electric force or measurement thereof? A. It is a unit of resistance. 2. How long will the Daniell battery work, if freely supplied with sulphate of copper, with a uniform force? A. That depends upon the size of the cell and the amount of current which it gives. For telegraph lines, these batteries generally work for about four months. 3. How long can they be used before the porous cups need to be renewed? A. The porous cup may be used, with care, for years. 4. What is the power of Daniell's compared with Lockwood's battery? A. Precisely the same. The Lockwood is only a modified form of the Daniell. 5. Does not the Daniell require the least care, and is it not the most reliable and simple for all practical purposes? A. No. There are other forms more suitable for some purposes.

(3) W. B. W. asks: What chemicals possess the property of destroying and disintegrating vegetable substances without corroding and destroying metals, as acids do? A. We think that strong potash lye in contact with steam at a high pressure will probably accomplish the desired result.

(4) G. B. R. says: I am experimenting with electricity, and I have made an electro-magnet; but passing the current through it makes both poles north or both south, according to the direction of the current. Has such a thing been done before? A. Nothing of the kind has ever been produced before to our knowledge.

(5) A. K. asks: What kind and number of wire ought I to use for a house electric telegraph, laying the wire between the bricks and plaster of the wall? A. No. 16 copper wire covered with gutta percha and enclosed in lead.

(6) W. B. B. asks: 1. Does carbonic acid gas, compressed in liquid form in a tube ¾ inch in diameter, create any damage, such as a dangerous explosion, if suddenly liberated? A. Yes. At the moment of liberation from pressure (about 600 lbs. to the square inch) one portion of the liquid rushes into the gaseous state, and, in the effort of so doing, abstracts so much heat from the remaining portion of the liquid that the temperature of the latter is reduced to such a degree as to convert it into the solid snowlike form. This sudden and extreme reduction of temperature causes a corresponding contraction of the glass tube, a contraction so nearly instantaneous, and of course unequal, that the tube is, in many cases, shattered into fragments. 2. What is the effect of heating the above tube to 300° Fah.? Does it increase the pressure in the tube? A. It would enormously increase the pressure. 3. What is the effect if the tube be placed in a cold mixture, say one of 0° Fah.? A. It would reduce the pressure. 4. What effect has carbonic acid on iron? A. Little or none if the metal be dry. 5. Will it keep its pressure in tubes for a number of years, provided they are tight? A. Yes. 6. Does it remain heated after it is compressed in tubes, or only during compression? A. Only during compression. It rapidly gains the temperature of the surrounding air.

(7) H. S. asks: What will take grease out of sheepskins after they are tanned with the wool on? A. Try digesting for a short time in bisulphide of carbon, and dry in the air. The sulphide is very volatile, and in a short time will completely evaporate, leaving no unpleasant odor behind.

(8) W. E. G. asks: 1. In a line of telegraph of about 12 miles long, worked in duplex, how much resistance will be required in resistance coils? A. About 200 ohms. 2. How many cups of battery will be required if the wire is No. 8 and has two relays, each measuring 125 ohms? A. About 24 of Daniell's cells. Four telegraph, according to your description, ought to work.

(9) H. H. asks: What produces the brilliant coloring of the autumn foliage? A. The action of organic acids upon the coloring matter of the leaves.

(10) F. asks: 1. Do the Chinese know the secret of welding copper? A. Yes. 2. Do they make copper edge tools? A. We are not informed on this point.

After kalsomining, is there any known chemical (combinable with the kalsomine) that will not wash off when water is applied? A. We do not know of anything that can be applied that would not, in some way, be objectionable.

(11) H. G. asks: What will remove grease from a tortoiseshell hair comb? A. Try steeping it in benzine or chloroform.

(12) W. H. G. asks: Can the aroma of Havana tobacco be taken from the stems? A. Yes. Crush them and digest for some time in hot water. Then decant the liquid and digest a second time with a little diluted alcohol, and finally remove the residue and carefully dry it. If it is desired to extract the nicotine, evaporate the decanted liquid to a sirupy consistence, and then agitate with twice its volume of alcohol, and allow to stand for a short time. The alcohol, under these conditions, will extract all of the nicotine salts from the aqueous solution, and rise to the top, forming a distinct layer, of a dark color. Decant this upper layer, concentrate by evaporation, mix with a small quantity of solution of potash, and briskly agitate with ether. The ether dissolves the nicotine and some fatty matter which the potash has liberated, and rises to the top when the mixture is left at rest. In order to separate the nicotine from its solvents, the etherial solution is decanted into a retort provided with means of transmitting dry hydrogen through it. Heat is now applied, and the ether is driven off. When the ether vapor ceases to come over, the temperature is raised to 356°, when the nicotine itself distils over and is collected.

(13) W. J. S. asks: Would it be beneficial to force linseed oil into the pores of the spokes and hubs of buggy wheels, after the spokes are driven, to prevent the natural shrinkage, which even the best seasoned timber is subject to in this climate? A. Your plan is a good one. Try it.

(14) W. M. B. asks: Is there a liquid preparation made that a spring, when heated to a cherry red, may be thrown in, and will come out of a good spring temper? A. We know of no such liquid, nor of any better plan than hardening the spring in water and blazing off in oil in the usual manner.

(15) E. W. H. says: 1. How is the dial of a galvanometer graduated? A. It is usual to graduate the dial into 360 equal parts. 2. What sizes of wire are used for the coils? A. The size of wire should be selected with regard to the currents to be measured. No. 18 or 20 will be found convenient we think. 3. Are there not 2 coils of different sizes of wire? A. Some galvanometers are made with several coils of wire, so that they can be used in a large range of measurements, but each coil should be arranged so that it may be separately included in circuit. The principle shown in your sketch applies to the induction coil, and not at all to the galvanometer.

(16) G. A. B. asks: What is the object of making soldering irons square instead of round? A. To increase the amount of contact.

(17) N. W. asks: What do you consider the most nearly correct theory of the earth's daily revolution on its axis? Whence comes the motive power? A. The earth persists in its motion for the same reason that a stone does after its leaving the hand which throws it, or as a railroad train will run several miles, by the motion acquired, after the steam has been shut off; and even after the engine has been reversed and the brakes applied, the train cannot be stopped in a less distance than half a mile, after running at a high speed. The motion was given to the earth during the period of its creation, and it is simply the momentum of its huge mass, combined with its astounding velocity and the absence of resisting obstructions, which keeps the motion up.

(18) J. B. F. asks: Of what ingredients should a composition be, for the ornaments for stove plate and similar light patterns? A. Use a soft alloy. See p. 91, vol. 30.

(19) J. T. M. asks: Would a small tube made of canvas dipped in hot paraffin answer as a flexible pipe to convey hot and cold water? A. No. 2. What would answer better? A. Leather hose.

(20) J. P. asks: What is the generally accepted explanation of the reflection of a ray of light from the inner surfaces of glass, diamonds, drops of water, and other transparent substances, causing the brilliancy of the diamond, the formation of the rainbow, etc.? A. The reflection from the inner surface of a transparent medium is similar to that from the outer surface. Observation and experiment have proved that it is a universal law that, when light passes from a dense into a rare medium, or *vice versa*, a part of the light is reflected in such a direction that the angles of reflection and incidence are equal. When, therefore, the surface between the two media is perfectly even, it acts like a mirror, and the smooth surface of still water is as good a reflecting mirror for the fishes under it as for men above, of which fact you may easily satisfy yourself by observing an aquarium. A piece of plate glass will also convince you of this by two reflections, one from the front and one from the back or interior surface, giving you two reflected images, which will coincide when the light falls perpendicularly, but become separated when the light is made to fall obliquely. The colors shown by diamonds or raindrops in the rainbow are not due to this reflection, but to the refraction of the rays when they enter and leave the diamonds or water drops; for the explanation of this we refer you to any modern text book on natural philosophy.

(21) J. H. asks: What difference will it make in the power of an engine to give the valve sufficient throw to allow a full opening of the ports? At present the valve opens the ports exactly one half. A. She will take a larger supply of steam at the beginning of the stroke, and develope a corresponding amount of extra power.

(22) E. P. W. asks: Do you know of any chemical that can be used to permeate or saturate hard or soft wood, to render it impervious to water, and prevent swelling when submerged therein? An exterior coating is not desirable. A. Boil the wood in paraffin.

(23) M. asks: How fast should the edge of a circular sheet iron disk run, for cutting wrought iron? A. Ten or twelve thousand feet per minute. 2. Can cast iron be cut in the same way? A. Yes.

Should the flues of a boiler be caulked when there is water in the boiler? A. No.

(24) W. B. D. says: I have used black oil in boilers, and found it very good to remove scales. Has it any bad effect on the iron? A. No.

(25) W. H. says: In your issue of October 16 are figured several boring tools. These forms would be admirable if used with short shanks and for shallow holes; but as no tool is certain never to be required in a deep and proportionately small hole, I see no excuse for making such tools, save habit and example. The common form of boring tool affords an example, almost unique, of universal perversity and failure to recognize a very simple situation. Those tools, if properly formed, might have eight times the strength of shank and still enter a hole equally small. It is simply necessary to form the tool so that the cutting edge is on a level with the axis or center of the shank or bar. I send three wooden models of boring tools, one a thread tool. A. Were either of the sample tools sent by our correspondent put to the full amount of duty obtainable from a tool of its size, it would break off at the cutting end. This defect might be obviated by lowering the temper, which would, however, reduce the cutting capability. The fault in the sample in each case is that, in the endeavor to get a large shank, the cutting part is ground away, so that one whose width should be ½ inch is but some $\frac{3}{16}$ in thickness, while another whose width should be ¾ is but little more than $\frac{5}{16}$ inch thick. The whole subject is explained, with engravings, in No. 3 of "Practical Mechanism."

(26) J. B. L. says: We have a rowboat 38 feet long, made of very light timber. How can we caulk it to make it tight? A. If it is well built, you may be able to make it watertight by filling the joints with white lead.

(27) J. O. B. asks: Why is it that a lifting pump for cold water will not lift hot water, at 400° or 500° Fah.? A. Because when the piston rises, the water boils, and the pump barrel is filled with vapor.

Why is lead given to a valve on the steam engine? A. Generally, in order to make the reciprocating parts move smoothly and without noise, or thumping, as it is usually termed.

(28) N. S. asks: I have a boat 30 feet long long and of 6 feet beam, displacing about 100 feet of water. I have 36 two inch steam pipes 39 inches long, connected by a 3 way piece so that the water can have a free circulation. Can I make them into a boiler to propel the boat, the pipes being cased inside of a stove frame with two returns for the heat? Will such a boiler be large enough for two 3x6 engines running on quarters? What speed may be obtained from such a boat? A. The boiler seems to be rather small, but it may answer for a moderate speed.

(29) C. C. says: I have a small boat 19 feet long, 4 feet 4 inches wide, sharp at both ends, and 18 inches deep; and I intend to put another 12 inches on it in depth, making it 30 inches deep. It is a clinker-built boat. I intend to put in an engine and boiler. The engine is 5 inches stroke by 3½ bore, upright, and cuts off at ¾ stroke. The boiler is horizontal, 4 feet long (besides the bonnets); it is of ¼ inch iron, with a dome 22 inches high and 1 foot in diameter. It has one flue 12 inches in diameter, in which the fire is built; and there are 6 return tubes varying from 2 inches to 3 inches in diameter. If I use coal, I intend to make the grate 2½ feet long and as wide as the flue will allow. 1. How large a screw wheel do I want, and what should the pitch and number of blades be? A. Use a propeller 24 inches in diameter, of 3 feet pitch, with either 3 or 4 blades. 2. What speed would it make with steam at 80 lbs. pressure? A. We think you may realize a speed of 6 miles an hour.

(30) G. E. P. asks. Will a rubber packing do for a piston head and piston valve rods? A. Yes.

(31) B. L. says: A friend of mine says that in ringing a bell, he has frequently got it into such a position that he cannot move it with his dead weight, and that, by holding the rope and raising his body with his arms, he can bring it down. I say that whatever power he gains beyond the weight of his body is due to the resistance which the inertia of his body gives to being raised. He says that this is not so, as he moves his body too slowly. Will you please settle this question? A. We think you have the right idea, as we understand your statement.

What is the meaning of nominal power of a steam engine? A. It is power rated by an arbitrary standard, not dependent on the actual conditions.

(32) F. B. says: I. I intend making a four-oar rowing boat of canvas, to fold together, and to be about 30 feet long, with extended rowlocks. How narrow can I make it to be safe from tipping? A. To be perfectly safe from tipping, it will require to be very broad. If you want to make it as narrow as convenient, you will find good examples in racing shells. 2. What must I use to make it waterproof? The canvas must not crack when the boat is folded up. A. Probably the experience of some of our readers will furnish the information you require; and if so, we would be glad to hear from them.

(33) J. C. G. asks: 1. Which engine will consume the most steam in doing the same amount of work, one with a long stroke or one with a short stroke? A. This is a contested point, and must be settled by taking into account the nature of the work. 2. Which is the best, a short cylinder with a long diameter, or a long cylinder with a short diameter? A. The reply to your first question answers this also.

(34) F. K. says: Our main water pipes are 2½ inches inside, and our fire plug 2 inches. What size of hose should I have to throw a stream of water to best advantage? Would you advise me to have gum or leather hose? A. Use 2½ inch hose. We think you will find rubber satisfactory.

(35) E. J. asks: 1. How many cups and of what size of Bunsen's battery will it require to put the first slight coating of nickel on 1 square foot of surface on cast iron? A. Two or three ordinary Bunsen cells. 2. What size of Smee's cell will it require to finish the plating on the same surface a A. One large Smee. 3. How long does it take to get a good deposit? A. Possibly 4 or 5 hours.

(36) R. F. B asks: 1. How many cables touch Canadian territory? A. Five. 2. What cables are they and where do they touch? A. See p. 120, vol. 32. Four of them land at North Sydney, and one at Tor Bay, Nova Scotia. 3. Where can I get information in reference to the depths of the seas and oceans? A. See the United States coast survey charts.

(37) G. K. says: 1. A brother engineer and myself are discussing the relative elasticity of steam and compressed air, one maintaining that, when used in an engine expansively, air will not give the same results as steam, as, for want of elasticity, the pressure will fall off much more rapidly after the cut-off than would be the case with steam. The other claims that there is little, if any, difference, in any event too little to be taken into account in practical working. As we have no means of making anything like a respectable test, please enlighten us upon the subject. A. If the temperature is sensibly constant during the expansion, there will be little difference in the two cases. You will find formulæ for the expansion and compression of air without gain or loss of heat in answer No. 14, August 21, 1871.

(38) P & K. ask: 1. Are bored wells from 6 to 16 inches in diameter not a failure, as a rule, on account of having too little reservoir? Does not the cost of boring wells nearly equal that of the ordinary method of digging? Is drilling a six inch hole in hard rock impracticable for wells, inasmuch as it costs too much? A. We think that some of our readers, who have had experience in these matters, can answer our correspondent more fully than we feel able to do. We hope to hear from them.

(39) J. T. W. asks: 1. What strain or pressure will a boiler 7 inches in diameter and 13 inches long, made of copper No. 18 gage stand? A. Fifty lbs. per square inch. 2. How large a safety valve should I use? A. Half an inch in diameter. 3. Would the boiler be large enough to run an engine with a cylinder of 1¼ inches bore and 3 inches stroke? A. It would run the engine, but would not do much work.

(40) L. W. F. asks: 1. Are vernier calipers fastened together before or after being hardened? A. Before. 2. Are they secured by rivets or tapering pins? A. Rivets.

(41) M. H F. asks: What is meant by cushioning as applied to steam in an engine? A. Cushioning takes place when the exhaust port is closed before the piston reaches the end of the stroke, which leaves some steam in the cylinder, which the piston compresses like a cushion.

(42) W. K. B asks: How can I make paste, such as is used by stereotypers? A. Common flour paste is sometimes used for this; but some stereotypers put white lead in the composition.

(43) G. H. M. asks; How can I attach canvas to the leather side of tanned lamb skins? A. Try a mixture of gutta percha and pitch, applied hot.

(44) J. F. asks: 1. Which is the best nonconductor of heat, wood or plaster of Paris? A. Wood. 2. Will heat crumble plaster of Paris after it has been dried? A. No, unless it is great.

(45) McC. T. & Co ask: Is exhaust steam beneficial or injurious if allowed to escape under grate bars? A. Sufficient steam to keep the grate bars from burning is good. It also increases the draft in the furnace.

(46) A. S. asks: Please give me a recipe to prevent cracking of rubber boots. A. The cracking of the rubber is due to the oxidation of the sulphur which it contains. As a preventive, coat the rubber with a thin covering of varnish made by dissolving pure gum rubber in hot naphtha or bisulphide of carbon.

(47) J. R. Y. Jr. asks: Can you give me a recipe for a waterproof mucilage, suitable for pasting labels on wood, something that will stand the weather? In your issue for October 16 I found a recipe for this purpose; but after several trials I have been compelled to abandon it, being unable to combine the glue and alcohol. I tried to combine the two by first dissolving the glue in water, and adding alcohol afterwards; but the glue thickened up and would not combine with the alcohol. A. Melt together equal parts of common pitch and gutta percha. It may be kept liquid under water, and it has been highly recommended both for its superior adhesiveness and waterproof quality after once being applied.

(48) G. W. L. asks: What cement will make the insides of paper barrels tasteless and odorless, and be sufficiently elastic and proof against vinegar, wine, and other liquids? A. Try coating the interior with hot paraffin.

(49) O. S. asks: I stamp embroidery patterns in this way: I lay a sheet of paper under the pattern which I wish to copy, and then trace the outlines on the paper underneath by pricking through the pattern with a fine needle. I then remove the paper, and place it on the cloth which I wish to stamp. I then take rosin and Prussian blue (or any other coloring substance), finely powdered, which I rub through the holes in the paper by means of a small pad, and the pattern shows well on the cloth. This paper is removed and replaced by a clean piece, after which a hot iron is run over to melt the rosin into the cloth. So far I have not been successful, as the pattern rubs off before I can get it worked. Will you tell what to put in the powder to make it stick? A. As a substitute for the Prussian blue and rosin, use first a little very finely ground aniline red, and then rub over this a cloth or sponge moistened with a little dilute alcohol. Dry, as before, with a hot iron. The paper should be removed immediately after applying the alcohol.

(50) N. F. H. asks: Can you inform me of any acid that will operate on ruby or other colored glass, so as to leave it in a rough state, like ground glass? I want to lay out sign work and leave the letters the same color as the glass. I have seen work of this kind done by acids, and it is much cheaper than if done by the sand blast. A. Hydrofluoric acid is used for this purpose. It is made by acting on powdered fluorspar with strong, hot oil of vitriol; and the gas that comes over is passed into water, which absorbs it. The hydrofluoric acid is often used in the gaseous state. A leaden tray is partially filled with the powdered fluorspar, and over this is poured the hot oil of vitriol. The plate of glass, previously prepared, is then secured over the dish tightly, and the gas, as it is liberated, exerts its peculiar corrosive action on the uncovered portions of the plate to its fullest extent.

(51) W. C. J. asks: Do you know of any street car, in this country or in Europe, in which wind is applied as a motor? A. No.

(52) J. V. R. says: I have a quantity of homemade wine, that has fermented in too warm a place, and has consequently become somewhat acid. How can I correct it without injury to its flavor? A. The free acid may be neutralized by addition to the wine of the proper quantity of bicarbonate of soda.

(53) C. A. W. says: 1. I have some bits of gold which I wish to melt up and cast into different shapes. Can I melt it on a common forge or stove fire in a black lead crucible? A. Place the gold in a small black lead crucible with a little borax, and subject it to a very bright red heat for some time, or until complete fusion ensues. 2. Can I pour it best into a charcoal mold? A. No. Molds made of iron slightly waxed or greased are used for this purpose. 3. Do I need a flux? A. Yes. 4. Will silver admit of the same treatment? A. Small beads of both gold and silver may be fused in charcoal, when mixed with a small quantity of borax and heated strongly by means of a blowpipe or blast lamp.

(54) W. D. says: What is the percentage of salt of the water of the Dead Sea? A. The solid matter is 21·722 parts in 100, nearly all of the solids being salts of sodium, magnesium, lime, etc.

(55) J. B. S. asks: Why was it that, in establishing a uniform gage for railroads, 4 feet 8½ inches was chosen instead of 4 feet 8 or some other even number of inches? A. The first railroads were constructed for coal traffic, and were of the same gage as the colliery tramways, 4 feet 8½ inches; and the latter are so old that no one can now tell why this width was chosen.

(56) E. D. P. asks: 1. What are the melting points of gold and silver? A. Gold melts at 2010° Fah., and silver at 1873°.

(57) R. P. G. asks: By what process is cocoa nut oil obtained? A. It is obtained from the cocoa nut, either by expression or decoction. It is of a fine white color, liquid at 80° Fah., and of the consistence of lard below that point, becoming solid at about 40°. It is used for making toilet soaps, and is sometimes employed medicinally in cases of consumption. It must not be confounded with cacao oil or butter, which is obtained from the cacao or chocolate nut.

(58) C. A. K. asks: 1. Am I right in believing that coal is formed by the decomposition of vegetable matter? A. Yes. 2. What proof have you of this? A. The cleavage of blocks of coal frequently shows the forms of the leaves of the vegetable matter from which the coal was made. Fern leaves, especially, are often seen singularly perfect.

(59) W. J. H. says: We have lately put up a large band saw for re-sawing lumber. After running a few days, the saw cracked along the front edge of the blade. What is the cause? A. Either the saw was brittle, or the wheels were of too small a diameter for the thickness, or too great a strain was put upon the saw. A band saw of No. 16 gage should be run on a wheel 6 feet, No. 17 on a wheel 5 feet, and No. 18 on a wheel 4 feet in diameter. This is a good rule to act upon, but an extra tough saw of No. 16 gage may run successfully on a 4 foot wheel, and No. 17 very well on the same size. Parties using band saws should bear in mind that they must not file or sharpen to acute angles, but leave all angles round.—J. E. E., of Pa.

(60) A. S. T. asks: 1. Please tell me the best way to temper tooth chisels for cutting marble. A. Harden at a bright cherry red in a mixture of 1 gallon whale oil (pure), 2 lbs. rosin, and 1 lb. beeswax. Warm the oil, melt the rosin and wax, and stir together while hot; as the mixture loses its hardening properties, add more rosin and beeswax, then draw to the proper color. The above mixture will harden without fire-cracking. 2. Does filing the tooth hurt the steel? A. No.—J. E. E., of Pa.

(61) J. B. J. says, in answer to D. A. R.'s query as to the weight necessary to break an iron bar: If the iron bar is firmly fixed at one end, and the load applied at the other, then $W=\frac{D^2 B}{l}\times k$, in which D=depth of bar in inches, B=horizontal breadth in inches, l=length in feet from support to center of weight, k=536 for east iron, 598 for wrought iron (mean of 4 authorities, varying somewhat with quality of metal and manufacture), W=breaking weight in lbs. In the given case $\frac{4^2\times 1\frac{1}{2}}{\frac{7}{8}}$ ×536 or 598=3,752 cast and 4,186 wrought iron, when the flat side is vertical. If the longer side is placed horizontally, then $\frac{(1\frac{1}{2})^2 4}{\frac{7}{8}}\times 536$ or 598=612¾ for cast or 683·4 lbs. for wrought iron. For safety, one fourth of the above should be used.

(62) J. G says, in answer to F. B.'s query as to dropping a ball in a railroad car: Your friend is correct if the motion of the train is uniform, since the directions of the force or gravity, while the ball is falling, are sensibly parallel. If the train had moved (which is an impossible case) such a distance in a straight line during the fall of the ball that the direction of the earth's attraction could no longer be considered parallel during this time, the ball will not strike the same point of the floor as when the train is at rest, neither will it do so if, during the fall, the train changes its motion either in direction or velocity.

COMMUNICATIONS RECEIVED.

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

On an Air Locomotive. By F. G. W.
On Diphtheria. By J. W. H.
On Imaginative Arithmetic. By S. S.
On Iron. By J. D.
On Specific Gravity, etc. By J. B. M.
On the Mechanical Equivalent of Zinc. By H. M. P.
On Experiments in Geometry. By A. B.

Also inquiries and answers from the following:

J. L.—C. P.—H. S.—M.—J. C. G.—R. H. B.—R. W.—G. W. B.—M. H. S.—J. S. R.

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 patentability 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 inquiries analogous to the following are sent: "What is the value of dry extract of oak bark for tanning? What is the price of soluble glass? Who has a steam process for drying lumber, and will furnish particulars? Who makes a picture frame mitering machine, working two knives? Who sells self-rocking cradles? Who makes the best air pump, and what is its capacity? Who makes cotton spinning and weaving machinery? Who sells steam pumps, suitable for irrigation? Whose is the best ice-making machine? Who sells tools for making stencil plates?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

[OFFICIAL.]

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FOR WHICH

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