## Business and Personal.

*The Charge for Insertion under this head is One Dollar a line for each insertion. If the Notice exceeds four lines, One Dollar and a Half per line will be charged.*



## Notes & Queries

C. H. W. will find articles on the canal boat award in New York State on p. 81, vol. 30.—A. B. will find on pp. 235, 236, vol. 36, directions for coloring brickwork.—J. H. P. can use olive oil in combination with phosphorus in a glass tube. We cannot work out his problem for him.—W. E. N. will find directions for imitating black walnut on p. 90, vol. 32.—J. P. L. will find the dimensions and threads of gas pipe on p. 378, vol. 32.—J. B. B. will find a recipe for lacquer for brass on p. 116, vol. 33.—P. A. F. will find a recipe for a filling for safes on p. 75, vol. 32.—C. D. C. will find directions for polishing brass on p. 298, vol. 29.—J. K. will find directions for skeletonizing leaves on p. 155, vol. 31.—J. W. F. S. will find an article on the manufacture of postage stamps on pp. 208, 277, vol. 27.—G. W. A. should read our article, on p. 33, vol. 33, as to ascertaining the power of an engine.—J. W. P. will find something on the manufacture of starch on p. 154, vol. 30.—C. B. M. will find the proportions of a surface condenser on p. 395, vol. 32.—C. F. F. will find an explanation of the speeds of different parts of a wagon wheel on p. 298, vol. 31. The other question is too absurd to need reply.—E. S. K. will find a recipe for a durable paint for floors on p. 165, vol. 34.—W. M. will find directions for magnetizing steel on p. 37, vol. 31.—E. J. L. is informed that the relative power of different batteries is described on p. 26, vol. 26.—L. B. should read our articles, on pp. 325, 340, vol. 36, on granite and marbleized ware.—M. G. will find directions for melting vulcanized rubber on p. 119, vol. 28. To mend rubber boots, see p. 203, vol. 30.—A. R. will find the flying machine suggestions carefully discussed on p. 112, vol. 32.—H. B. K. will find that the ball dropped into a hole through the earth is discussed on pp. 138, 250, vol. 31.—D. H. will find directions for manufacturing corn starch on p. 154, vol. 30.—W. Z.'s query as to carrying a piece of timber is answered on p. 363, vol. 36.—D. K. H. will find on p. 156, vol. 31, directions for making rubber stamps.—W. B. P. cannot make better manifold transfer paper than is described on p. 278, vol. 28.—A. R. will find a recipe for hair dye on p. 220, vol. 35.—S. J. H. will find on p. 298, vol. 27, directions for preserving insects.—J. C. S. will find a description of a method of utilizing the motion of a ship to pump water from the hold on p. 13, vol. 26.—C. L. will find directions for making charcoal into blocks for filters on p. 395, vol. 32.—H. D. H. is informed that we do not kuow what he means by "enameling on pearl or ivory."—H. C. H. will find directions for waterproofing canvas on p. 347, vol. 31.—W. S. V. can enlarge his designs by using a pantagraph. See p. 179, vol. 28.—Dr. J. Z. T. can make a good rubber cement by following the directions on p. 139, vol. 35. This also answers T. T., who asks for a cement with which to mend a rubber belt.—A. R. F. will find directions for making printers' rollers on p. 283, vol. 31.—W. W. M. will find directions for preserving eggs on p. 219, vol. 31.—E. A. W. will find an excellent recipe for hair wash on p. 138, vol. 33.—L. M. will find a recipe for a depilatory on p. 186, vol. 34.—R. T. P. is informed that no sensible person believes in the efficacy of a madstone.—T. D. is informed that we do not answer legal queries.—R. K. P. will find on p. 37, vol. 31, directions for making permanent magnets.—C. C. T.'s query as to cement for making rubber bags was answered on p. 139, vol. 35.—H. T., J. K., B. L., J. H., W. R., J. B. D., J. L., C. S. F., S. P. F. F., N. J. T., and others, who ask us to recommend books on industrial and scientific subjects, should address the booksellers who advertise in our columns, all of whom are trustworthy firms, for catalogues.

(1) W. A. C. says: I claim that the proper way to get the equation of panel wainscoating, ascending flights of stairs, should be to plumb up from the steps or stringboard. A friend claims that the proper way is to square out at right angles from the stringboard. Who is right? A. Your friend is right, if the object is to make the wainscoting upon the stairs appear of the same width as that upon the level floors of the building. It also requires the same amount of material to construct it per line or foot, measured upon the raking line of the cap moulding, as that upon the level floor following the line of the same moulding.

(2) F. S. asks: If, in a church design, it be desired to use a statue standing erect thirty feet above the observer, what height should be given the figure, according to scale? What is the rule for finding such height? A. Statues when set above the horizontal plane of vision should be sufficiently elongated to compensate for the dwarfing effect of the perspective. This does not refer to the size, but merely to the proportion between the width and the height. If you take a point distant 3 times the height as a proper station from which to obtain a good view of the statue, a line drawn from that point to the base of the statue and another from the same point to the apex, will limit the length of a line drawn across these starting at the base of the statue and running at right angles to the lower line from the eye; this cross line will indicate the height of the statue as it appears to the eye, and should be 6 feet. The statue itself should be of the increased height indicated by the vertical line at the end of the lines proceeding from the eye. But the width of the parts should be very slightly increased, if any.

Why does water discharge more rapidly through a tube than through an orifice of same size? A. It may be from the greater accumulation of the momentum which this form affords over the mere orifice. However, the fact is known, but not the cause.

(3) W. R. H. asks: What is the best method of treating shingle roofs so that the ice will not adhere so tightly near the eaves as to cause the water to back up and leak through? A. The remedy is to line your gutter with tin, and extend the tin up the roof to a width equal to that of 3 or 4 courses of shingles.

(4) M. A. says: I have an underground cistern in good order, which was well cleaned out before letting in water. The water now has a strong sulphurous taste and smell, which I am of opinion is caused by electricity discharged into it by means of the conductor pipes during a severe thunderstorm, as it had not this taste and smell previous to the storm. I am anxious to purify this water for drinking; can you suggest a method? A. The unpleasant taste, etc., of the water cannot be due to the effects of lightning. It may be due to the corrosive action of the water on the lightning rod terminals; but it is far more probable that the trouble is caused by decomposing vegetable matter. Throw into the cistern several bushels of well and freshly burnt charcoal. If this does not improve the water, try a little lime water, first experimenting on a small sample of the water to determine the proper quantity.

(5) D. S. M. asks: What is the shortest and most correct method of computing the cost of a certain amount of lumber at a given price per thousand feet? A. It is considered a very simple operation, and consists simply in multiplying the number of feet by the price per foot.

(6) H. D. D. says: 1. I propose building a boat about the proportions of the Whitehall boat described in your SUPPLEMENT No. 37, but about twice the size, that is, 32 feet long by 8 feet beam. I will put in it a locomotive boiler 6 feet long by 2 feet, with which I will run two oscillating engines about 5 x 7 inches, with a screw 14 inches in diameter and of 3 feet pitch. The screw will work half below the keel, and be so arranged that in shallow water it can be elevated so as not to strike the bottom. This I will do by having a joint on the shaft; and the block by which the shaft passes through the stern post will slide up and down, having a guard running under the screw to a hinge on the keel, which on striking the bottom will force the block up the stern post. Do you think my plan is a good one? A. The screw is rather small, and we think your engines are larger than is necessary. 2. About what will be the draught? A. The draught can be made from 22 to 24 inches.

(7) N. M. H. asks: Can you tell me of a cheap paint or substitute for paint for brick walls? We have been using some old bricks which show stains of mortar. What is a good substitute for oil and Venetian red? A. We do not know of any substitute that will be worth while to try.

(8) F. S. C. says: We are told that sulphate of lime is one of the most insoluble substances we have: in fact, that it cannot be dissolved in water; therefore, if we drink water containing it, it cannot be deposited in the system, causing gravel or other kindred diseases. What I cannot understand is this: Sharon Spring water contains 85 grains of sulphate of lime to the gallon; and when it is drawn from the spring (and that is the time we drink it) it is as clear as crystal, although after it has stood a few hours it becomes milky and opaque. If a little is spilt on the boots, it leaves a mark like a chalk mark. When the water is clear as a crystal, how can the sulphate of lime be otherwise than dissolved? And if dissolved, why does it not become deposited in the system? A. Sulphate of lime dissolves in water; but its solubility is not great. All spring waters contain more or less of it. The opalescent appearance in the water after standing is due to the separation of the other lime salts and carbonate of magnesia on the escape of the excess of carbonic acid, and the oxidation of the hydrosulphate of lime to form sulphate. As to why the lime in solution does not cause gravel and Bright's disease, it would be impossible to give other answer than that, in a healthy condition of the system, means are naturally provided for utilizing part of it as bone food, and for discharging that which is not required.

(9) F. S., Jr., asks: How can I make an artificial stone sidewalk? A. The most important ingredient is a good cement. English Portland cement is generally preferred. Procure a sharp, light-colored sand, and wash it free from all particles of soft earth or soil; also some stone chips, gravel, and large stone. Excavate the sidewalk about 18 inches deep, and fill in the large stone to within 6 inches of the surface; prepare a concrete made of the cement 1 part, stone chips and gravel about 6 parts, and bed it in upon the stone bottom to within 2 inches of the surface; then prepare a concrete of the cement 1 part and fine sand 2 parts, and lay it in up to the surface, floating the surface with the cement at pleasure. Finish by lining off into very regular blocks. A more economical sidewalk can be made by omitting the stone bed, but it will require a good hard soil to lay it on, and then will not be so sure of being permanent.

(10) J. H. D. says: About a year ago I bought some bleached shellac gum, and cut it with alcohol without any difficulty. A few days since, I tried some of the same gum, it having been kept in a dark dry closet; and it would only soften in alcohol, but not dissolve. After trying it in three different purchases of alcohol, I bought some more gum, and it worked all right. I would like to know why I could not dissolve the gum I had on hand? A. Break it into as fine a powder as possible, boil with clean water, and partially dry. We think it will then dissolve readily in alcohol, if the same be not too dilute.

(11) J. B. asks: Can a piece of iron drawn out square be termed wire? A. It would not be wire in the ordinary acceptation of the term.

(12) L. R. says: 1. I asked you some time ago how to clean dirty lubricating oil. You said: "Filter it through plugs of cotton wool." I have taken a large funnel and put raw cotton in it, but it will not work. A. Agitate it with a small percentage of oil of vitriol, and then thoroughly wash it with water by agitation; syphon off the oil, and let stand over quicklime. To filter oil from mechanically contained impurities, fit a small cork, cut star-shaped, in the angle of a funnel, so that it will not impede the passage of liquids, and cover this loosely with cotton wool (raw cotton). If properly arranged, the oil will pass through, leaving the impurities in the cotton. 2. Please let me know how to wash dirty cotton waste? A. A strong, hot solution of soap and washing soda is generally employed. 3. Is there anything better for taking grease off waste than concentrated lye? A. Yes, bisulphide of carbon is much better.

(13) H. S. P. asks: Which runs lighter, a farm wagon with the usual sized thimble-skein axle, or a wagon of same size, etc., with an iron axle the thimble made tapering as usual? Does not the rule hold good in this case that the smaller the spindle, the less the friction? A. Yes, if the pressure does not become so great as to prevent efficient lubrication.

(14) J. McC. says, in reply to A. D. S., who asks how he can clean out his canal without drawing off the water: A very inexpensive dredging machine consists of a small scow, three men, a shovel with a long handle, and a rope. The shovel is made to take up, say a half bushel, and to have a bail to which to attach the rope. This shovel is manipulated by one man at the handle, who thrusts it into the mud, assisted if necessary by the other men pulling on the rope; and when the shovel is full, or supposed to be full, it is lifted up to the scow and emptied by being turned over by the man at the handle. If the canal is not very wide, a small mast and boom can be set up, and the shovel elevated to the end of the boom by running the rope through a single pulley block, when the shovel and its contents can be swung across the scow to the opposite bank, and the dirt deposited there.

(15) C. A. C. says: Please tell me how to stop foaming in a boiler? We have a 1½ horse power upright tubular, in use 15 minutes a day only, for steaming silk. I have tried black oil in vain, and am careful to draw with only ¼ open valve through ½ inch pipe. It operated nicely till we accidentally got a little soapsuds in it. I have blown off 5 times, but it is no whit better. A. Try the plan of running the boiler for a few hours with the blow valve partially open, and a strong feed; if the flow and check valves are so far apart that what is fed in will not be blown out again directly. If otherwise, run the boiler several hours, pumping up with a strong feed, and blowing down as often as practicable.

(16) W. B. says: I have seen it stated that experiments had been made in England not long ago, testing the draught of farm wagons of different construction, and as a result it was found that a wagon with the fore and hind wheels of equal height was the easiest to move on any road or any grade. I wish to have the details of the above experiments or of the construction of the wagon. A. The experiments referred to were probably made by the Royal Agricultural Society of England. If so, you will find full details in their reports.

(17) F. G. W. asks: 1. What is the strength of a boiler 22 inches long, 10 inches wide, and 6 inches high, the heads of which are ¾ inch thick, of cast iron, and sides of wrought tire iron ¼ inch thick? The boiler has round ends with straight sides. A. Carry 35 or 40 lbs. steam. 2. Would it be suitable for an engine having a cylinder of 3 inches stroke by 1½ inches diameter? A. You can probably make the boiler answer for this engine. 3. If I put twelve 1 inch pipes in it, and set it on a common stove, would the boiler be improved? A. It will be more efficient if you use the flues as suggested.

(18) E. P. C. says: My steamboat is using a surface condenser; the boiler is only 8 months old with no grease or sediment in it; but I cannot keep the socket bolts from leaking, and every little while I have to renew them. What is the cause of it? A. In such cases, if the boiler is allowed to receive a very thin coating of scale, the corrosive action is often stopped.

(19) W. R. McD. asks: What can be done to prevent rust in a wrought iron warm-air furnace, enclosed in brick walls, when not in use? Is there not some way to prevent rust without making an application to the iron itself? A. We think you will find this difficult, unless you can expel the air, and seal the furnace hermetically.

(20) G. M. M. says: I have a cellar into which the water comes after a heavy continued rain. It is walled with stone and the walls are cemented. The floor or bottom has 2½ inches of hydraulic lime and gravel. How can I keep the water out? A. To make your cellar perfectly tight may be attended with considerable expense. It would require several coats of asphaltic cement applied on bottom and sides when the cellar is dry, and then loaded with brick or concrete of a weight equal to that of the water when at its highest point. When properly applied this would insure your cellar from water not only, but even from dampness.

(21) A. says: Miramichi (New Brunswick) raftsmen assert that rafted logs make headway through the water in floating down stream—that is, that they always go faster than the current; also that single logs go somewhat faster than the current, but are invariably passed by rafts; they also declare that a log with its ends up and down stream goes down faster than a log which drifts down sidewise. A. We would like to be sure that these assertions are founded on fact before attempting an explanation.

(22) W. W. E. says, in reply to A. D. S., who asked as to cleaning out his mill race: Put in sluice gates about every 200 or 300 yards, the bottom of which should be 12 or 18 inches below the bottom of the canal: then open one gate at a time, so as to drain the water from the canal, and the water will carry the mud and sediment with it. To facilitate the moving of the mud, put a small punt or flat-bottomed boat in the canal, get in it, and rock it until the water is moving rapidly under it. This has been my practice for 20 years. One hand can thus move more mud in one day than 20 hands can with shovels.

(23) O. H. Y. says: I would say to E. C. H., who asks how to put Babbitt boxes on a shaft without their becoming fast. Oil the shaft slightly and sprinkle the surface lightly with powdered plumbago. The shaft will slip out very easily and all the little holes in the box will be filled with a valuable lubricant.

(24) J. L. M. asks: Is there any process by which tin can be brazed? I wish to make a large number of smooth metal tubes capable of resisting mild acids. A. You fail to state what kind of acids. As a general thing, any ordinary metal or alloy cannot be trusted with even dilute acids. If the acid is dilute sulphuric, copper, lead, or an alloy of these may be used; but neither of these entirely resist the action of even very dilute muriatic, nitric, acetic acids. Tin offers more effectual resistance to some of them as it is seldom pure, it will also give way after a time. Perhaps the best, and certainly the most economical, way would be to enamel the exposed parts of the metal (see p. 21, vol. 36); or if this is impracticable, coat them with a varnish made of gutta percha, caoutchouc, or a mixture of the two dissolved in coal naphtha.

(25) W. E. says: I have a wooden tank to keep silver solution in. I tried pure pitch for lining, but the solution ate holes in it. What is the composition that is used for lining wooden tanks to hold silver solution? A. Wooden tanks are not best for silver baths. Use a paint made by dissolving equal parts of gutta percha and gum rubber in hot coal naphtha. Heat the naphtha over a large water bath.

(26) I. Q. G. asks: How can I paint a sign and apply smalt blue? What is used to make the smalt adhere, and how is it applied? Is the smalt dusted on and left till the background is dry? A. Dust in on a background of oil size.

(27) C. E. G. asks: What can I put into paraffin oil to prevent it from staining cloth, not destroying its lubricating qualities? A. We know of nothing.

(28) G. B. asks: How can I make gunpowder and gun cotton? A. For gunpowder the materials (charcoal, sulphur, and saltpeter) are first perfectly dried and separately reduced to impalpable powders. These are then sifted together, moistened with water, and ground for some time between large millstones kept constantly moist with water. The wet powder is then collected into large lumps and carefully dried. These lumps are grained by bringing them in contact with sharp teeth fixed upon the periphery of a revolving wheel, and agitating in suitable sieves to separate from the finer powder. The powder consists of 76 parts of niter, 13 parts of charcoal, and 11 parts of sulphur. Gun cotton is made by immersing clean dry cotton for a few moments in a mixture of equal parts of fuming sul-