Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) J. H. asks: How can I make a paste or composition for ornamenting picture frames such as picture frame makers use? A. See answer to A. K. this page.

(2) W. S. B. writes: I have a valuable plumbago mine and am obliged to sell a share in it, but don't know the actual value of it. Will you please inform me as to the price per pound of pure plumbago? A. From one to four cents a pound.

(3) H. B. N. asks: 1. What cement should I use for fastening the carbon plate of a bichromate of potash battery to the metallic conductor? A. No cement is employed. Use a metal clamp. 2. Is the inclosed fragment kaolin; if so, of what grade? A. The substance inclosed is an impure kaolin.

(4) H. C. asks: 1. Can you give me a simple method of mounting or stretching lithographs for framing without glass? A. Use dry cotton cloth of uniform thread, free from knots and similar imperfections. Stretch and tack the cloth over the frame, then go over every part of it with a moist sponge, and having brushed the back of the lithograph to be mounted with good clear, thick, cornstarch paste (to which has been added a trace of clove oil), spread it smoothly, face down, on a cloth-covered table. Then adjust the cloth back over it, and with a small cloth cushion go quickly over every part, from the center to the edges, with just pressure enough to drive out all excess of paste and air bubbles, and set it aside in a moderately warm place to dry slowly. 2. What kind of varnish should be used for varnishing lithographs, and method of applying? A. Use good, clear mastic or amber varnish, or any of the picture varnishes commonly sold for this purpose. 3. Can you give me a cement suitable for patching rubber boots, and method of applying? A. See "Cements," in SUPPLEMENT, No. 158. 4. What would you recommend for cleaning and polishing bright work (iron and brass) on an engine? A. Emery flour, mixed with a little sperm oil, is very good for this purpose. 5. Can you tell me anything to prevent rust on the bright work of machinery when not in use? A. Clean and dry the metal thoroughly, and smear every part with a mixture of fine lard and camphor (lard 10 pounds, camphor three ounces, mixed in a mortar by aid of gentle heat). After twelve hours, rub off excess of this mixture with dry rags. 6. Are the heads of small boilers screwed on the ends of the shell equal to or better than riveted? A. Rivets are preferable. 7. Is a boiler better full of water or empty when standing for some time, and why? A. It is better to blow out and thoroughly clean a boiler that is to remain out of use for any length of time. 8. Is well water, rain water, or soft spring water best for boilers, and why? A. Rain or soft water is best for steam-making purposes, because it contains no (or very little) foreign matter—liable to form incrustations on or corrode the plates—in solution.

(5) A. K. asks: Will you please tell me how the fine gilt frames are manufactured that are seen on large pictures? I have tried plaster of Paris, and then gilded it, but it breaks very easily. How is the original made? Is it cut out of wood or metal—if so, what kind? A. These frames are generally moulded from a composition composed of fine whiting (lime carbonate or powdered chalk) and hot glue or size. The whiting is simply worked up into a dough with the thin glue size solution, pressed into form, and allowed to dry and harden. Some of these frames are now made of papier mache—pulped paper, mixed with glue and whiting or clay. The gold leaf is attached with sizing, allowed to become nearly dry before attaching the leaf, which is afterward burnished.

(6) E. T. G. writes that he has had a fan blower demolished, with considerable blast pipe, by the explosion of gas on starting the blower after dinner, and he asks for an explanation and a remedy. A. A heavy inflammable gas, composed largely of carbonic oxide from the anthracite fires, enters and mingles with the air in the pipe and blower case. This mixture, in certain proportions, is explosive. When the fan is started a portion enters the fire and ignites the whole mixture. The remedy is to induce sufficient draught to carry off this heavy gas during the time the fan is stopped.

(7) J. W. W. asks: Is there anything to stop a boiler from foaming? A. Yes; but it is important first to know the cause. Sometimes a small quantity of oil sent in through the feed pump will effect it. 2. Is the water from the cylinder which is mixed with oil hurtful to a boiler? A. No. 3. I have been running a portable mill for the last year with no trouble until lately, when all at once the water rose in the boiler and rushed out with the steam, when I have to stop and refill the boiler with fresh water, which will run for a few hours only, causing a great deal of trouble and danger. A. It must be due to the foreign matter in the water. You should have the water analyzed.

(8) H. P. asks: Can you inform me, through the columns of the SCIENTIFIC AMERICAN, to which I am a subscriber, if there is any method of casting brass articles about an eighth of an inch thick, without any of the small particles of sand that adhere to the surface; in other words, to produce a perfectly clean casting? I have tried casting in warm metal moulds instead of the ordinary sand moulds, but the articles are so thin that the metal gets cold before it has run all over the mould. Having noticed some very fine American iron castings that are being sent into this country, I thought it possible you might give me some information. A. Small clean castings are made in sand moulds only. Great care must be taken in selecting the sand. The fine yellow loam sand found in Albany and Columbia county, in this State, is mostly used in the vicinity of New York for fine brass work. Dusting the moulds with fine wheat flour adds much to the cleanly appearance of the castings. If the patterns have sharp corners or other markings the moulds can be warmed to great advantage by holding a hot plate of iron over them, for a few minutes before closing and pouring. The composition of the metal is also of the utmost importance in making the surfaces bright and clean. A composition of 1 pound copper, ½ ounce tin, ½ ounce zinc, ¼ ounce lead, make a rich golden color, and when taken out of the mould and dipped in water quickly after pouring brings out a fine surface color. All patterns where fine surfaces are required should be of metal and very smooth. The above remarks are also applicable to iron castings as far as selection of sand and finish of patterns go. The moulds should be dusted with finely ground charcoal or plumbago. The quality of the iron is most important and should be fine grained and very fusible. The "Berlin castings," so celebrated for fineness, are supposed to be an alloy of iron and arsenic.

(9) Z. A. Q. writes: Please give some receipt for filling small pieces of walnut, such as gun stocks, bracket work, etc., to be used before putting shellac on. A. Make a thin paste by triturating together starch and water glass sirup (30 per cent solution). Warm the wood (which should be dry), and rub this filler well into every part intended to hold the filler. Then let it get thoroughly dry, and rub it down well before varnishing.

(10) A. L. B. asks: Please inform me how kid gloves are cleaned? A. Mix dry potter's clay into a thin paste with "deodorized" benzine; mount the gloves on suitable dummy forms, and go over every part with this paste. Then plunge the gloves into a quantity of the pure benzine for half an hour; press out excess of liquid, dry in the air, and then rub into every part as much of a mixture of equal parts of the yolk of eggs and flour as the material will absorb. For white leather substitute half glycerine and white of egg for the yolk.

(11) R. R. S. writes: In your issue of the SCIENTIFIC AMERICAN, March 11, 1882, we notice an article on the cleansing of soiled chamois leather, in which we are interested, as we often are obliged to do it. There is, however, one term the meaning of which we do not understand: "yellow soap." What kind of soap is this? A. Yellow or resin soap is the common variety of laundry soap, usually sold in bars.

(12) A. T. asks: Can you tell me how to strip nickel from goods for replating? A. See "Electro-metallurgy," in SUPPLEMENT, No. 310.

(13) H. F. asks: Where is the greatest pressure in a steam boiler, at the top or at the bottom; and how much does the pressure differ? A. At the bottom. The water adds 1 pound pressure for each 27 inches depth.

(14) J. N. D. writes: 1. I have a 12x20 inch engine, running 100 revolutions a minute, supplied with steam through a 2 inch pipe. Is this not too small? A. Yes; it should be 2½ inches to 3 inches diameter. 2. I wish to test my boiler. Can I fill boiler and drum with water and get sufficient expansion by heating without reaching the boiling point? A. Yes; but the test should be made very carefully, firing with light chips or shavings, so that the fire could be instantly hauled or put out as soon as the pressure is reached.

(15) W. W. writes: I want to put a pipe condenser for exhaust steam outside a small boat. The water condensed will, of course, collect in the lowest part of this pipe. Will the exhaust steam be able to force this water upward, say 18 to 24 inches, without strain on the engine or loss of power? A. No; it should be drawn from the pipe by the air pump.

(16) J. C. asks: 1. Can a hand force pump be made to draw water from a well 20 feet deep, with horizontal pipe, the vertical height below cylinder to surface of water being about 13 feet, horizontal distance being 25 feet? A. Yes. 2. Will there be sufficient force for fire purposes? A. Yes; if enough power is applied. 3. What sized pipe will be needed? A. Pipe not less than half the diameter of pump.

(17) J. Y. B. asks: What is the size of the Bristol's engine, of the Fall River Line, that is, horse power, stroke, and diameter of cylinder? A. Cylinder 110 inches diameter by 12 feet stroke. In ordinary working, about 2,000 or 2,100 horse power.

(18) J. M. asks: What length and beam of a boat would be required for a boiler 20 inches diameter and 3 feet high, with 120 brass tubes, 20 inches long? Boiler has waterback round fire box, with engine 3x4, estimated weight of boiler and engine 500 pounds. Would a boat 23 feet long with 5 feet beam be suitable? A. About 22 feet in length and 5 feet beam. It might be made two or three feet longer

(19) J. A. asks if it will make any difference in the capacity of a rope in drawing a 500 pound weight up by the end of the rope or drawing it up by having the rope over a pulley. A. The only difference will be the power required to overcome the friction. The strain upon the rope to which the weight is attached will be the same in either case.

(20) J. O. asks: 1. Can an experienced machinist tell the exact quality of steel by the polish? A. No. 2. Can an experienced man detect the good from the bad steel after the metal has been manufactured into knife blades? A. Not without some kind of test. 3. Why is hand forged cutlery better than other kinds? A. Probably because the hand hammering compacts or fines the grain of the steel.

[OFFICIAL.]

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Letters Patent of the United States were Granted in the Week Ending

April 11, 1882,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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