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 the office. Price 10 cents each.

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

(1) G. A. S. writes: At present I have in use a rubber cloth carriage top which has commenced to leak on account of the coating having become warm. Would like to learn of some composition easily made or readily procured which may be applied to cover to prevent leakage. I have a small quantity of a solution of gutta percha in carbon disulphide. Would this answer? A. The rubber solution you speak of is intended to be applied with heat and rubbing with a hot iron burnisher. We doubt if you can repair the wagon top satisfactorily. Thick white lead paint would do except that it would make it too stiff. Use four pounds of lead to the pint of oil, so as to make almost a paste.

(2) J. H. L. asks what quantity of "oxygen gas" is used per hour in the "oxycalcium" light for magic lantern work. Also the size of jet to use, and pressure on gas holder. A. The amount of oxygen consumed in an oxyhydrogen or oxycalcium burner depends altogether on the amount of light required, that is, provided the burner is properly made. Two feet per hour ought to yield a fair light. Of course you can consume two or three times that amount. The pressure in gas cylinders ranges from 60 to 85 pounds.

(3) H. L. writes: We are looking for a paint to use on ice racks and around doors and on shelves of refrigerators which will cover up the smell of pine and give out no offensive odor. Can you help us? A. Zinc white in oil tinted with any of the ordinary colors, well dried, ought to make an acceptable finish for refrigerator Oxide of iron or Prince's metallic paint; is a very strong and durable paint; it does not give off a disagreeable odor. It makes a good tint with zinc white. Chrome yellow is also good. These colors must be thoroughly dried to make them entirely odorless. If you cannot use oil, the only other substance that would probably answer your requirements is shellac varnish, 2 or 3 coats, drying each before the next is put on.

(4) E. K. asks: If you wished to warm a room by steam and the room is closed up, can you not raise the temperature of the room to a higher degree than the temperature of the steam at boiler pressure? Of course we mean heat by direct radiation through steam pipes. A. You cannot heat a room as hot as the steam at the boiler pressure. In drying rooms for japanned and rubber goods, a temperature is seldom obtained nearer than from 15° to 30° below the temperature of the steam in the pipes.

(5) C. F. N. asks (1) whether red rags will make white paper, or are red rags practically useless as regards paper making? A. Red rags are not used to make any other than the most ordinary grades of paper, although when capable of being well bleached they are made available by mixing with rags of a better grade 2. Again, is there any premium upon said subject? A. No premium on subject that we are aware of.

(6) F. J. F. writes: Will you please explain in Notes and Queries the process of photo-electrotyping? A. The various photographic processes as applied to printing are very thoroughly described in SUPPLEMENTS, No. 82, 143, 146, and 213, to which we refer you.

(7) J. G. from Hawaii writes: I doweled together the base and column of a marble monument with two iron half inch dowels, three inches inside, and I find that the iron rust has come through to the outside. Please let me know what I can use to take it out. A. Dilute mineral acids, such as hydrochloric acid, will wash out the iron rust; but if it has penetrated any distance, you will only injure the marble by attempting to better it, as marble likewise is soluble in the acid referred to.

(8) G. A. N. asks: 1. What is the best and lightest material to make balloons out of? A. Silk is best; linen will answer. 2. How is the material made waterproof and airtight? A. By coating it with varnish. See answer to query 13, SCIENTIFIC AMERICAN, June 9, 1883. 3. How large will a balloon have to be to carry 300 pounds, not including weight of ropes, net, and equipments? A. This can only be ascertained by consulting a practical balloonist. See SUPPLEMENT, No. 50, on the "Progress of Aeronautics."

(9) P. D. asks: 1. What per cent of gas tar is phenol in bulk? A. Percentage varies considerably with the kind of coal used to produce the tar. Calvert states that from English coals the average production varies from 3 to 14 pounds per 100 of tar. Other authorities state from 7 to 33 per cent. 2. How may it be separated from the other components? A. It is separated by fractional distillation and purification by treatment with alkalies, etc. 3. Is the process expensive? A. The process is not very expensive.

(10) M. A. asks how to prevent starch from becoming sour. A. Add a little oil of cloves or solution of salicylic acid to your starch when making it.

(11) G. B. T. writes: Will you please inform me how I can make an enamel upon zinc or other metals in white with black figures? Also, how I can prepare card board so as to render it impervious to the humidity of the air, and finish it with a smooth, glossy surface. The card board is white with black figures. I have first covered the printed board with hot starch, when dry flowed with dammar varnish. They turn yellow when exposed to the sunlight. The starch was to prevent the ink from running into the varnish. A. Calcine 100 parts lead and 20 to 30 parts of tin thoroughly. Melt 100 parts this mixture with 100 of white sand and 25 or 30 parts salt. When cool pulverize very finely. This gives a dead white enamel for the ground. The black can be formed by the addition of black oxide manganese or protoxide of iron. Apply to metal in form of a paste in water, to which a little glue has been added, and fire. Size your paper with a starch solution, and then varnish with white shellac instead of dammar.

(12) A. S. R. writes: I have some modeler's wax that is too hard; how can I temper it? How is the wax made? A. Modeling wax is made of a mixture of wax and lard. It may have other constituents, but the above are the regular ones. To make it, melt the lard and then add wax in small pieces until a sample cooled is found to have the right consistence. If too stiff, temper it with lard.

(13) G. B. C. writes: Will you please to give me the proportional increase required to make a hand electric machine similar to the one in No. 161 of SCIENTIFIC AMERICAN SUPPLEMENT, that will give twice as much of a current—the increase in number of wire and of turns, also the armature? A. Make the machine one-half larger. Wind with the same number of turns and with wire of the same size.

(14) L. L. Van L. asks for a recipe for dressing for ladies' kid leather shoes.

A. Gum shellac.....2 ounces.
Aqua ammonia .....1 ounce.
Water.....8 ounces.
Black aniline.....enough to color.

Heat the ingredients slowly together (except the aniline) until the whole is near boiling and the shellac dissolves. It may be necessary to add a little more ammonia during the boiling. Then add the aniline and water (enough to make the whole measure sixteen ounces).

(15) H. S. writes: 1. In current vol. xlix., No. 6, page 87, you speak of a new substitute for rubber, discovered by MM. Dankworth and Landers; can you tell me about how much it costs per pound? A. The article referred to is not yet in this market. 2. If two bar magnets are placed together, parallel with each other, and with opposite poles in contact, do they not become weakened or neutralized? A. No, the tendency will be to mutually strengthen each other. 3. Is it not best to place something between them to preserve their integrity? If so, what kinds of substance is it best to use, and what distance apart is it advisable to place them? A. Magnets are generally wrapped in oiled paper to keep them from rusting. It is not necessary to separate them to preserve their strength. 4. Is crystallized carbon, or diamond, a conductor of electricity? A. Diamond is practically a nonconductor of electricity.

(16) W. E. K. asks what is the best proportion of sulphuric acid and water to use with scrap zinc to generate hydrogen gas, and what quantity of gas will be generated? A. Use about one pound of acid to ten pounds of water. This is about equivalent to one measure of acid to five of water; 98 pounds of acid and 65 pounds of zinc give practically 350 cubic feet of hydrogen.

(17) G. B. G. asks what height water can be thrown through a one inch nozzle, 50 feet of 3 inch hose, attached to a hydrant of on foot diameter, the height of reservoir being two hundred feet. And is the ratio the same, or per cent of distance thrown the same under all heads? A. According to table given in "Box Hydraulics," *without* hose, height is 137 feet, but this is theoretical. According to experiments at Kingston (Jamaica), with 40 feet 2½ inch hose and seven-eighths inch nozzle, the height of jet was under a head of 156 feet, 85 feet and 84 feet; and with three lengths of hose, 64 feet and 62 feet. The result of experiments are so variable, that no reliable law or formula can be given for practical results. 2. At what height should a reservoir be placed to make the pressure sufficient for effective work in case of fire, with buildings three stories high? A. If your three stories are equal to total height of 34 or 36 feet, we think the head should not be less than 150 to 160 feet to throw an effective stream.

(18) C. C. V. asks: 1. Is there any known means of making one's hair permanently gray, by artificial means? A. We know of no means for insuring permanent white hair. 2. Can a white, hard compound be made either from caoutchouc or gutta percha? A. No satisfactory process for producing perfectly white rubber or gutta percha is known.

(19) C. H. W. writes: Can you tell me how to remove the interior or bony portion of a cow's horn in making powder horns? A. Use dilute muriatic acid; also try the effect of heat and boiling water.

(20) T. M. W. writes: Can you give me some information in regard to the flux used in the process of zinc coating? The writer has made various trials, and has succeeded in doing very fair work, but not as good as the best; and the loss of metal from oxidation is so great that it is evident the right flux has not been used. A. The iron articles are cleaned if necessary by dilute sulphuric or hydrochloric acid, and with emery. They then are dipped in a saturated solution of chloride of zinc and salammoniac. Salammoniac is kept upon the surface of the melted zinc, and the iron articles are plunged into the melted metal through the salammoniac. This salt is the flux you ask for Do not have your bath too hot, and you will have no trouble. Sometimes one-sixth part of mercury and a very little sodium are added to the melted zinc. The latter should not exceed one two-thousandth of the zinc.

(21) J. E. B. writes: I have a set of ivory handled knives whose handles have turned yellow with use. How can the original whiteness be restored to ivory under such circumstances? A. Binoxide of hydrogen is used for bleaching ivory. It is also recommended to expose the ivory to strong sunlight under a glass covering. This will sometimes bleach it.

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