Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(1) J. W. B.—The standard height of drawbars on freight cars from center to rail, as regulated by the Association of Master Mechanics, is thirty-three inches, with a variation of no more than one inch for unloaded cars.

(2) L. W. C. asks whether Babbitt or bronze is best for a bearing for a small shaft running at a high speed. A. Hard bronze made of 3 ounces tin to 16 ounces copper makes the best bearings for small high speed shafts.

(3) U. W. T. asks: 1. What is best to clean tombstones and not spoil the enamel? A. Mix ¼ pound soft soap with the same amount of pounded whiting, 1 ounce soda, and a piece of stone blue the size of a walnut; boil these together for a quarter of an hour; while hot rub it over the tombstone with a piece of flannel, and leave it on for 24 hours, ther wash it off with clean water and polish with a pie e of coarse flannel. 2. Of what can I make a paint that will not wash off, to paint the letters on a tombstone to represent gold? A. Use the ordinary gold paint sold by art stores, consisting of powdered brass and oil of turpentine. All such paints will wash off in time. 3. Of what can I make a solution to silver-plate brass? A. See the article on "Electro-metallurgy" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 310.

(4) G. H. J.—Sulphuric ether gently applied with cotton wool, away from the light, is effective for removing printer's ink from paper, if sufficient pains be taken. Put blotting paper beneath the one from which the ink is to be removed, and use clean white blotting paper to absorb the color after each application of the ether. A weak solution of oxalic acid is used for removing writing ink, with some kinds of which it is effective without materially injuring the paper.

(5) A. E. B.—The saponaceous lotion of the London Pharmacopœia is used as a cosmetic, and has the following composition: Take liquor of carbonate of potassa ½ ounce, olive oil 4 ounces, rose water 12 ounces; agitate together.

(6) L. S. J. and E. F. G.—To get rid of ants in the garden, apply a tablespoonful of carbolic acid to 64 of water to their nests, and they will disappear. To drive them out of the house is more difficult, but an be accomplished by placing red pepper in the places they frequent most, and scrub the shelves or drawers with carbolic soap.

(7) F. A. B. asks how to make the composition used in the manufacture of picture frames (gilt frames). A. Various receipts are used, among others: Mix 14 pounds of glue, 7 pounds resin, ½ pound pitch, 2½ pints linseed oil, 5 pints of water, more or less, according to the quantity desired. Several pages are devoted to this subject in Spons' "Workshop Receipts," first series, which we can send you postpaid for $2.00.

(8) L. H. B. desires a cheap solution with which to make permanently transparent thin bond paper, that it may be used for tracing drawings, etc., one that is easily applied, and of not too fatty substance, that it might resist the ink. A. The paper is first treated with boiled linseed oil, and the excess of oily particles removed with benzine. The paper is then washed in a chlorine bath. When dry, it is again washed with oxygenated water.

(9) M. H. C. writes: In your issue for March 17, 1888, you gave a receipt for making type writer inks with aniline dyes. State in what manner the inks may be kept from fading. A. All aniline inks will fade with time, and in consequence, the government and large firms prohibit the use of aniline inks for important documents.

(10) P. J. W. asks: How is alabaster cleaned that is dirty and fly specked? A. Rub with shave grass, and then with Venetian soap and chalk, stirred into a paste with water.

(11) J. J. C. writes: I am living in a new house and I am troubled with ants; will you please inform me what I should do to get rid of them? A. Bunches of green tansy strewed around are said to be an effectual remedy for those pests.

(12) B. H. C. writes: 1. My son Fred, 13 years of age, has almost completed a motor according to your directions, since his vacation commenced, a few days ago, and is anxious about the battery. A. A plunging bichromate battery may be made by clamping together three plates (5 inches wide and 7 inches high), one of zinc and two of carbon, with intervening strips of wood previously soaked in hot paraffine. The zinc is placed between the carbons, and separated from them by strips of paraffined wood ¼ inch thick, placed at the top. The plates are clamped together by two bars of paraffined wood, which project beyond the edges of the plates and are drawn together by two common wood screws so as to closely bind together the upper ends of the plates and the intervening wooden strips. Before putting the elements together, the upper ends of the carbons should be heated and filled with paraffine for about an inch only. This is best done by rubbing on the paraffine while the carbon is hot. The zinc should be amalgamated by dipping it into a solution of nitrate of mercury. Connection is made with the zinc and carbon plates by inserting strips of sheet copper between the plates and the wooden clamping pieces. The zinc of one element should be connected with both carbon plates of the next element, and so on, and the first zinc plate and last two carbon plates should be connected with the motor. The plates thus prepared are to be plunged into the bichromate solution, which is contained in glass or porcelain vessels. The solution is made in the following way: Dissolve bichromate of potash in hot water to saturation; when cool pour in very slowly one-fifth its volume of sulphuric acid. For every gallon of solution add about one drachm of bisulphate of mercury. The solution should be made in an earthenware vessel. Great care is necessary in handling the acid and finished solution, as they are very poisonous and corrosive. The elements of the battery should remain plunged only when the battery is in use. 2. Allow me to trouble you to tell me the best elementary book on electricity, to get for Fred. Not too elementary. A. We recommend Thompson's "Elementary Electricity."

(13) E. F. F. asks for a process of making chloride of gold from a gold dollar, that will be suitable for photographic purposes. A. Dr. John H. Janeway, an amateur photographer, suggests the following method: Dissolve a $2.50 gold piece in 6 drachms of chemically pure muriatic acid, 3 drachms of chemically pure nitric acid, and 3 drachms distilled water. Put the gold in a large graduate, pour on the acids and water, cover the graduate with a piece of glass, to shut off or retard the escape of fumes, and set in the sun or in a warm place. When the gold is dissolved add bicarbonate of soda, very gradually, stirring with a glass rod at each addition, until efferves ence has ceased and the froth subsided, and the carbonate of copper which has been formed is deposited as a green precipitate. Now add 6 ounces of water, and let the whole settle for not over thirty minutes, then very carefully filter the solution. To the clear golden liquid which has passed through the filter add carefully enough nitric acid, chemically pure, to turn blue litmus paper decidedly red, then add enough pure water to make the solution measure 32 fluid ounces. The solution will keep for any length of time, and one ounce will tone four sheets of paper. From Philadelphia *Photographer*.

(14) C. E. S. writes: I have constructed a hand power dynamo as per directions in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161, and I have succeeded without difficulty. It will bring 5 inches platina wire, No. 36, to a red heat. It will bring four Edison three-candle lamps to incandescence, the armature making about 1,500 revolutions per minute. As I have several pounds of No. 16 and No. 18 magnet wire on hand, I would like to make as large an electro-magnet as the above machine can work to advantage. Please give me the following information: How long and thick should the iron cores be, which size wire do you recommend? The wire is insulated with silk. I have used the same sort on the dynamo. A. Make the cores of your magnets 1¼ inches in diameter and 8 inches long. Attach them to a yoke 1 inch thick, 2 inches wide, and 7 inches long, leaving a space of 3 inches between the cores. Wind each core in two sections, and use ten layers of No. 16 wire in each section. Arranged in this way you can connect all the sections in parallel, or all in series, or two in parallel and two in series.

(15) E. H. B. writes: I have just completed an electric motor such as was described in your SUPPLEMENT, No. 641. It runs very nicely. Would you, through your paper, please answer the following questions? 1. Can it be run by an alternating current? If so, what change must be made? A. The motor cannot be run by an alternating current. 2. What is the difference between the plunging bichromate battery mentioned in your paper and the Grenet battery described on page 72 of vol. i. of "Electricity and the Electric Telegraph," by George B. Prescott? A. There is essentially no difference. 3. Where can I get the carbon and zinc plates, and how thick must they be? A. The carbon and zinc plates should be ¼ of an inch thick. You can procure them from any dealer in electrical supplies.

(16) C. S. W. — Mr. L. O. Howard, acting entomologist, Department of Agriculture, says the specimen is one of the slug caterpillars or stinging caterpillars, of which there are several species common in the eastern United States, especially toward the south. This particular one is the larva of *Lagoa opercularis*. This larva is a very general feeder, although the oak seems to be its particular food plant. It has also been found upon apple, quince, orange, and various other trees. It is not common enough to do any appreciable damage.

(17) S. E. M. asks (1) whether a bed room cannot be perfectly ventilated by one open window, the shutters being closed and the slats of the shutters open, that is, horizontal. I am told that a room to be well ventilated requires two openings, but do not the open slats of the two shutters afford these openings, one for the entrance for pure air, the other for the exit for respired air? A. Whether a room can be ventilated by a single window depends on the size of the room and on many other factors. The shutters only impede ventilation. 2. Can the human voice be cultivated without a master? Are there no books, reliable and good, which one could follow and escape the expense of a music master? A. We believe the voice cannot be properly cultivated without a teacher. We can supply you with "Orthophony, or Vocal Culture," by Professor Francis T. Russell. Price $1.50.

(18) S. S. B. asks: 1. Material saturated with soapy water will not pass through a rubber wringer. What shall I use to squeeze these goods? A. Use a centrifugal drier. This will do the work satisfactorily. 2. Is there any way to neutralize the soapy water in goods that have been scoured more readily than by repeated washings and wringings? A. We advise washing and wringing; chemicals would be apt to do injury. Acids will destroy the soap, but will set free fatty acids harder to dispose of than the soap itself.

(19) K. B. asks: 1. How large should the core and spool be, and what length and size of wire should be used, in the electro-magnet for a bell used with about forty feet of circuit? A. Use ⅝ inch round iron for cores, and wind with No. 22 to No. 24 wire, putting on ten or fifteen layers. 2. I have made a little battery for experimenting, consisting of two short electric light carbons and one zinc 2 inches by 1 inch in a solution of common salt. How many cells of this would I want for the bell? A. Use four cells of battery with chloride of ammonium (sal ammoniac) instead of salt. 3. Does it matter in a battery to have the carbon plate small? Does it just increase the resistance? A. The large carbon assists depolarization. It diminishes resistance only if there is a correspondingly large surface of zinc facing it.

(20) J. E. A. asks how much longer time fresh eggs will be preserved or kept good if turned over end for end often than if not so turned at all, and how long they will keep good under different circumstances. A. See the article on "How to Preserve Eggs for the Market," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 317. Similar articles in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 101 and 308 are of value.

(21) F. P. desires a simple recipe for making what is called small beer, in small quantities. A. Take a handful of hops to a pail of water, and add a pint of bran, half a pint of molasses, a cup of yeast, and a spoonful of ginger.

(22) L. K. asks the best way for mending rubber boots. A. Use rubber cement. See formula given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158, under title of "Cements."

(23) W. H. C. asks a receipt for making an invisible ink that can be developed with heat and that will fade away when the paper is allowed to cool. A. A mixture of 1 part sulphuric acid with 50 parts of water. The writing is to be done with a quill, and will be, when dry, entirely colorless and invisible, but on heating carefully over a flame, or by laying on a hot oven, it will appear in deep black characters. The marks are indelible. A solution of chloride of cobalt is invisible when cold, and green when hot, and fades away as it cools.

TO INVENTORS.

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July 17, 1888,

AND EACH BEARING THAT DATE.

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