

Business and Personal.

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Notes & Queries

- (1) J. R. asks how to bleach human hair? A. Gaseous chlorine is the most effective agent. Cleanse the hair in a warm solution of soda, and wash with water. While moist, put in a jar and introduce chlorine, until the air in the jar looks greenish. Allow to stand for 24 hours, and if necessary repeat the operation.
- (2) E. W. M. asks how to make celluloid? A. See reply to G. R. (73) p. 204, No. 13, present volume SCIENTIFIC AMERICAN.
- (3) J. H. H. asks: What is used to make gold leaf adhere to the letters cut into a granite monument? A. Apply a coat of size and then two or three coats of size and fine powdered whiting. Let each coat dry and rub down with fine glass paper before the next is applied. Then go over it thinly and evenly with gold size, and apply the gold leaf.
- (4) J. L. S. asks: 1. If coal oil will percolate through glass? A. No. 2. Also, if there is any known material which can percolate through glass without destroying it? A. No.

- (5) C. W. & S. ask how the marbling of paper is done? A. A mucilage of gum is prepared, about the thickness of sweet oil, and placed in a shallow trough. The colors are sprinkled on the gum and disposed as fancy may dictate. The sheets of paper are taken, one by one, bent in the form of a bow, and gradually let fall on the composition in the trough. The colors, which float on the surface, and a portion of the mucilage adhere to the paper, which is then taken up and hung on racks to dry. The paper is then finished by burnishing.
- (6) W. H. S. & F. D. ask for a recipe for making liquid solder, to be used without heat? A. Mix together bismuth ¼ oz., quicksilver ¼ oz., block tin filings 1 oz., spirits of salt (muriatic acid) 1 oz.
- (7) K., B. & L. ask how to ebonize hard wood in durable color? A. Black may be produced by means of coppers and nutgalls, or by japanning with two coats of black japan, after which varnish or polish, or use size and lampblack previous to laying on the japan. Another method is to pour two quarts boiling water over one oz. powdered extract of logwood, and when solution is effected, add one drachm of yellow chromate of potash, the whole being well stirred. Repeat on the wood with general applications until the desired depth of color is produced.
- (8) M. J. G. asks for information in the art of "marbleizing" or imitating the colored marbles on inferior marble? My chief difficulty lies in the preparation of the water and in the colors. A. It is necessary to heat the marble hot, but not so hot as to injure it, the proper heat being that at which the colors nearly boil. For blue, use alkaline indigo dye, or turnsole with alkali; for red, dragon's blood in spirits of wine; for yellow, gamboge in spirits of wine; for gold color, sal ammoniac, sulphate of zinc, and vermillion, equal parts; for green, sap green in spirits of potash; for brown, tincture of logwood; for crimson, alkanet root in turpentine. To stain marble well is a difficult operation.
- (9) F. H. S. asks how rubber stamps are made? A. See SCIENTIFIC AMERICAN, present volume, No. 6, p. 91 (33), and No. 17, p. 267 (17), and SCIENTIFIC AMERICAN SUPPLEMENT No. 83.
- (10) J. W. W. asks for a black composition or cement to fill in zinc work that will stand exposure to the weather? A. Use pitch 11 lbs., lampblack 1 lb., turpentine sufficient. Mix with heat.
- (11) H. G. asks for a recipe that will show the twist on gun barrels? A. Spirits of niter ¾ oz., tincture of steel ¾ oz., or use the unmedicated tincture of iron if the tincture of steel cannot be obtained; black brimstone (sulphur vivum) ¼ oz., blue vitriol ½ oz., corrosive sublimate ¼ oz., nitric acid 1 drachm, coppers ¼ oz.; mix with ½ pint of rainwater, and bottle for use. Clean the barrels and apply as directed in (36), p. 203, current volume.
- (12) J. B. asks for a recipe for tempering millpicks? A. Select good cast steel. Forge carefully, using a low heat, and light blows. To harden get two gallons of rain water, add 2 lbs. of salt. Take off the chill of the water by plunging a hot iron into it. Heat the pick gradually from the center, and plunge the point vertically into the water, letting the heat toward the center draw the temper. Draw to a "red" or "copper color."
- (13) C. R. & F. S. ask if the price of gold as a metal is higher than that of platinum? A. Yes.
- (14) A. T. B. asks how to drill a ½ inch hole through glass ¼ inch thick? A. Use a sand blast or a revolving cylinder of wood, brass, or copper, of the desired size of hole, supplied with emery and water.
- (15) W. B. asks: What is Zeiodite, and how is it made? A. It is made by mixing 20 to 30 parts roll sulphur with 24 parts powdered glue or pumice, which forms a mass as hard as stone. It is said to resist the action of water and acids.
- (16) E. A. J. asks how to fill the engraved parts of plated ware, that after plating with gold the designs may appear like burnished silver? A. Cover the parts not designed to be plated with wax, deposit the metal by electro-plating, and finish by burnishing. What is used as a body for filling the texture of silk goods used in banner making, that will keep the silk flexible and elastic? A. A thin size of bleached shellac and alcohol is used. For inside work the white of an egg makes a good size. If gold is to be laid, put it on while the size is still wet. A little honey, combined with thick glue, is sometimes used.
- (17) C. N. N. asks: When is the greatest strain upon a bridge? Is it while a train is moving slowly or while running at a high rate of speed? A. When moving at a high speed.
- (18) E. B. D. asks how to color gold plate Roman or Etruscan color? A. See SCIENTIFIC AMERICAN, present volume, No. 5, p. 75 (27).
- (19) J. S. H. asks: What is the best method of making an oil belt for finishing or polishing hard wood? A. If a wide belt is desired, use canvas, if a narrow one use leather, running over pulleys the same as common belts are run, one pulley, of course, being the driver. Coat the belt with glue and sprinkle on fine sand, the fineness of which must be appropriate to the finish required. Let the glue get thoroughly dry before using.
- (20) E. C. C. says: I wish to make moulds to cast a few badges of soft metal. How can I best succeed in so doing? A. See No. 17 SCIENTIFIC AMERICAN SUPPLEMENT, p. 272, for directions for such work.
- (21) C. H. W. asks how to prepare the paper matrix for stereotyping? A. Take thick soft un-sized paper and paste upon it two or three sheets of tissue paper, or until it is about the thickness of paste-board. Cover the under side with fine powdered French chalk, and lay it upon the form of type, and beat with a stiff brush so as to force the soft paper into all the interstices of the type. Add other sheets of adhesive paper until a sufficient thickness is obtained. Cover with a woolen blanket and place in a press, the bed of

- which has been moderately heated. Screw the press down and the heat will dry the matrix, which may then be removed for casting.
- (22) A. A. K. asks if there is a patent on engraving glass by means of the sand blast? A. Yes.
- (23) M. A. C. says: 1. With an engine running at 54 revolutions per minute, turning the main shaft 200 revolutions per minute, if the speed of this shaft be reduced to 25 revolutions by increasing the size of pulleys, will it tend to economize steam? A. You do not give sufficient details to give an answer. 2. Will you give a rule to reduce or increase the size of pulleys to give any required speed? A. See p. 181, No. 12, current volume SCIENTIFIC AMERICAN. 3. Also a rule to line a shaft of any length, supposing the building not to be square? A. Use a level and plumb. See No. 2, p. 24, last volume SCIENTIFIC AMERICAN. 4. Also a rule to find the points where a belt will pass through floors running over different sized pulleys? A. Lay out a diagram to any convenient scale and then transfer the points to the floors where the belt is to pass through. 5. Suppose the valve of an engine be set a little back, what effect does it have on the diagram as made by the indicator? A. The diagram will show that the valve does not open as soon as is desirable. 6. How is the power of an engine computed from an indicator diagram? A. Find the mean effective pressure in the piston in lbs.; multiply this by the speed of the piston in feet per minute, and divide by 33,000.
- (24) A. Z. asks for a recipe for waterproofing heavy manilla paper? A. Melt in a vessel 30 ozs. good glue and 3 ozs. gum arabic in 10 pints hot water. In another vessel 20 ozs. soap and 4 lbs. alum. Mix the contents of the two vessels. Call this composition No. 1. In another vessel heat ½ gallon benzole and 1 gallon paraffin, and melt it in 24 ozs. resin. Boil until it attains a good degree of consistency. This is called No. 2. Dip the paper to be waterproofed in composition No. 1 while in a heated state, and then dry it. Next apply composition No. 2 in a cooled state, with a brush, in any convenient manner.
- (25) C. H. C. asks how to remove the taste of hydraulic cement, that at first permeates the water in a cistern when first filled? A. The presence of lime in water is a source of great trouble, and to those using it for steam boilers, of the greatest danger, in crusting either as a sulphate or carbonate; and preventing contact between the water and the iron. The only absolute remedy is to distil the water; but this is expensive and inconvenient. If you breathe slowly, through a common clay pipe stem, into a tumbler of lime water, the water will become clouded with carbonate of lime, produced by the carbonic acid of the breath combining with the lime; a deal of this carbonate will gradually settle to the bottom of the tumbler; you might be able to use the water by burning a bushel of charcoal in a clay stove, suspended just over its surface; stir the water occasionally with a stick, and it will absorb a large quantity of the carbonic acid; be careful not to fall in the cistern, as the gas would cause immediate suffocation and death.
- (26) C. W. asks how to make a good cement for glass and china ware? A. Soak 2 drachms cut isinglass in 2 ozs. water for twenty-four hours, boil down to 1 oz., add 1 oz. alcohol and strain through a cloth. Mix this while hot with a solution of 1 drachm mastic in 1 oz. of alcohol, and triturate thoroughly with ½ drachm powdered gum ammoniac. How can I make glycerin soap? A. Take any mild toilet soap and intimately mix with it about one twentieth of its weight of glycerin, while the soap is in a liquid state. It may be tinged red or rose color with a tincture of orchil or dragon's blood, or orange yellow with a little annatto. It may be variously scented, but oil of bergamot or rose-geranium supported with a little oil of cassia, or caesla supported with oil of almonds, appear to be the best perfumes.
- (27) A. S. G. asks: 1. What is the calcium light? A. It is commonly called the Drummond light, and is produced by the action of the oxyhydrogen flame on perfectly pure lime, made free from silica by precipitation and afterwards calcined and pressed into moulds. 2. Is it practical to use for lighting a dwelling house? A. No.
- (28) R. K. S. asks if water will act as well as oil for lubricating journals, when iron is run on Bab-bitt metal? A. No.
- (29) K. asks: What is meerschm, and where is it obtained? A. Meerschm is a hydrous silicate of magnesia. It is a mineral of soft earthy textures somewhat resembling chalk. It is found in Spain and several countries at the head of the Mediterranean, but chiefly in some parts of Greece and Turkey.
- (30) H. B. K. asks how to dye horn a black color? A. A deep black may be produced by boiling the horn for some time in a strained decoction of logwood, and then steeping it in a solution of red sulphate, or red acetate of iron.
- (31) A. T. R. asks how to color iron wire cloth a blue tint? A. Grind Prussian blue in shellac varnish and use as a paint.
- (32) C. H. H. asks: 1. How patent leather is made? A. See SCIENTIFIC AMERICAN No. 4, p. 60 (47). 2. How is the polish given to morocco leather? A. By varnishing with white of eggs and burnishing. 3. How can I make liquid blacking that will give a gloss without the use of a brush? A. Gum arabic 4 ozs., coarse moist sugar 1½ ozs., good black ink ¼ pint; strong vinegar 2 ozs., rectified spirit of wine and sweet oil of each 1 oz.; dissolve the gum in the ink, add the oil, rub them in a mortar until thoroughly united, then add the vinegar, and then the spirit. Apply with a bit of sponge.
- (33) E. O. H. asks: What is the best preparation for removing inkstains from collars, cuffs, etc.? A. Stains may be removed by the application of a little lemon juice, citric acid, diluted muriatic acid, oxalic acid, or tartaric acid; or by means of chlorine water or solution of bleaching powder. The linen should be freed from starch and soap, and should be afterwards thoroughly rinsed in warm water before using soap. Marking inks are variously removed by ammonia wa-

- ter, solution of bleaching powder, chlorine water, dilute iodine tincture, or cyanide of potassium—this latter is very poisonous.
- (34) W. J. asks: Is there anything that can be mixed with melted paraffin in order to thin it without depriving it of its quick chilling property? A. We know of nothing.
- (35) C. D. N. asks: 1. What is dextrin, such as is used for mucilage? A. Commercial dextrin, or "British gum" is obtained by heating dry potato starch to a temperature of 750° Fah. in sheet iron trays or revolving iron or copper drums, similar to those used in coffee roasting, whereby it is transformed into semi-transparent, brownish lumps, which are converted into a pale yellow powder by grinding between millstones. It is completely soluble in cold water, from which it may be precipitated by addition of excess of strong alcohol. 2. How can I keep away the skin or mould that collects on such mucilage? A. Add a few drops of oil of cloves, and exclude dust and air by a suitable cover. To make a good solution of carbolic acid, what proportion of crystals and water must be used? Must the water be hot? The solution is needed for healing sores. A. Pure (crystallized) carbolic acid dissolves in 20 parts cold water. For use in surgery and medicine it is usually dissolved in diluted glycerin; the strength of solution depends upon the application; for ordinary external healing purposes dissolve one drachm of the carbolic acid in a mixture of one oz. of glycerin and eight ozs. of water. Why does black ink get ropy like molasses, and what is the remedy? A. Usually from the evaporation of the water, accumulation of dust, or decomposition of the excess of tannin.
- (36) B. A. W. asks: How is the dilute solution of terchloride of gold prepared for coloring bass chain? How much soda must be added? A. Dissolve the gold chloride in about 40 parts of water; add 10 parts of the alkali and boil; dip the articles to be colored in this while boiling.
- (37) P. O. S. asks how to prepare potassium or ammonium sulpho-cyanide? A. To prepare potassium sulpho-cyanide, mix together 48 parts of anhydrous potassium ferrocyanide, 17 parts of potassium carbonate, and 32 parts of sulphur; introduce the mixture into an iron pan provided with a lid, and fuse at a gentle heat; maintain the same temperature until the swelling of the mass which ensues at first has completely subsided, and given place to a state of tranquil fusion; increase the temperature now to dull redness. Remove the half cooled and still soft mass, pulverize it, and boil with alcohol. Let the alcoholic solution cool, when a part of the salt in the pure state will crystallize out, and the remainder may be obtained by distilling the alcohol from the mother-liquor. Ammonium sulpho-cyanide may be obtained by mixing ammonium cyanide with yellow ammonium sulphide, and digesting this for some time with finely divided sulphur; by boiling the filtered solution the excess of ammonium sulphide may be expelled, and the sulpho-cyanide crystallized out.
- (38) J. T. S. asks: What is the gum used on the United States postage stamps composed of, and how is it made and how is it applied? Also whether it can be bought in a gum state? A. Gum dextrin, 2 parts; acetic acid, 1 part; water, 5 parts; dissolve in the water and acid by heat, and add ½ part alcohol. Heat moderately in a covered vessel for some time with occasional stirring. It is applied hot by suitable rollers. It is not sold prepared.
- (39) W. T. K. asks: What is honey dew as found occasionally on leaves of trees? A. The saccharine liquid phenomenon has been the subject of much discussion. By some it is supposed to be the secretion of insects; by others not. That plant lice, or aphides, do secrete a saccharine liquid is well established; on the other hand it seems to be equally well established that sometimes the liquid is exuded by the leaves of trees without insects being concerned in the operation. Dry weather is most favorable to its production. It is especially frequent on certain kinds of trees, such as linden. The rain or dew has nothing to do with its formation.
- (40) E. T. S. asks: 1. How to make a permanent magnet, horseshoe shape? A. Use hardest crucible steel, wrought into form and tempered nearly to straw color. It may be magnetized by bringing its poles in contact with those of a strong magnet, or by winding it (in one direction) with covered copper wire, and then passing through the wire a strong current of electricity from a galvanic battery. 2. Will it still be a permanent magnet if the horseshoe is straightened out, or can a straight rod be made a permanent magnet? A. Yes; tempered steel of any form can be magnetized.
- (41) T. W. asks: 1. What is the easiest and simplest way of finding the horse power of any engine? A. The power of a steam engine is calculated by multiplying together the area of the piston in inches, the mean steam pressure in lbs. per square inch, the length of stroke in feet, and the number of strokes per minute; and dividing the product by 33,000. 2. Was James Watt the first inventor of the steam engine? A. No. 3. What kind of an engine did he produce? A. A low pressure condensing engine. 4. We have a well that always had plenty of water in it, but this summer it has dried up. A well adjoining has always plenty of water. Our well is open at the top and the other is not. Is there a remedy so we can get water? A. Perhaps the following will start the flow: Introduce several hogshoed of water, seal the mouth of the well around a tube reaching to the bottom, and apply a pump. 5. An engineer says that a suction pump when put in to feed a boiler against 60 lbs. pressure, the pump would always stop and stick. I said it was the strain put on it, he said the pump contained more water than it could force. Which is right? A. You are probably both right.
- (42) R. S. asks: I have a recipe for silver plating which reads thus: Dissolve 1 oz. nitrate of silver (crystal) in 12 ozs. water, then dissolve in the water 2 ozs. cyanuret of potash, and shake; then add ½ as much whiting as there is of the fluid, and it is ready for use. Is this a good recipe and safe to use? A. The bath will probably work well without the addition of whiting. The double cyanide of silver and potassium is the best