

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 This is for our information, and not for publication.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 Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) T. B. writes: I am building a canvas boat. Would you kindly let me know what the preparation is that is put on the canvas previous to painting? A. The canvas is painted with a coat of raw linseed oil on the inside before it is put on the boat, then when on the boat it is painted with two coats. A cement of pitch, gutta percha, linseed oil, and litharge is also used. See "The Construction of Canvas Canoes," SCIENTIFIC AMERICAN SUPPLEMENT, No. 216.

(2) D. J. C. writes: Do you know of any way by which I can reduce balsam fir to a liquid state, so as to put it in a "cough medicine" which I am trying to make? I do not wish to use alcohol, but expect to use glycerine instead. Would 1 ounce of glycerine be too much to put in a common sized bottle to preserve the medicine? I expect to use hoarhound, licorice, mullein, balsam fir, and other things in it. A Balsam of fir is soluble in turpentine, but as the latter may be objectionable for your purpose, we would suggest that a simple mixture be made with your other ingredients. As to the quantity of glycerine, the amount mentioned seems sufficient for preservative purposes.

(3) A. D. L. & Co. ask (1) how to make a preparation for coating canvas to make tarpaulin. A. Softsoap is first dissolved in hot water, and a solution of copperas (ferrous sulphate) is added. The sulphuric acid combines with the potash of the soap, and the oxide of iron is precipitated with the fatty acids as an insoluble iron soap. This is washed and dried and mixed with linseed oil. The addition of dissolved India rubber greatly improves the paint. The foregoing preparation is then applied to the canvas. 2. The receipt for making eau sedative? A. Dorvault gives the following. Take of:

- Ammonium hydroxide..... 60 parts.
Tincture of camphor..... 10 "
Sodium chloride..... 60 "
Water..... 1000 "

(4) J. F. S. desires a receipt for oxidizing silver black economically, without the use of platinum, and yet be durable. A. Perhaps the following may be satisfactory: Dissolve copper sulphate 2 dwts., potassium nitrate 1 dwt., and ammonium chloride 2 dwts., in a little acetic acid. Apply with a camel's hair pencil, but warm the article first, and expose the article to the fumes of sulphur in a closed box. The parts not to be colored must be coated with wax.

(5) C. M. E. asks: 1. Is coal oil composed (chemically) of the raw petroleum from which it was obtained? A. Coal oil is petroleum. Kerosene and naphtha are distillates of petroleum coming over between certain temperatures. and having certain densities or specific gravities. Their composition cannot be expressed by a simple formula, for they are mixtures. 2. What union or unions of the oil, air, and water take place when the first and last of the three are brought by heat to the gaseous state and ignited? A. The products of a perfect combustion are water and carbon dioxide, that is, the carbon of the fuel and the hydrogen of the same take up oxygen from the air, giving rise to the substances just mentioned. 3. What residue after combustion? A. There is generally a residue of carbon, or soot.

(6) W. W. A.—The manufacture of water gas on a large scale for illumination is cheap, and for any purpose cheaper than coal gas at New York prices for gas coal. It would not be practicable for domestic purposes.—Water grates made of gas pipe have been in use for many years. They have not been a success except on locomotives.—Do not know of an electric type writer.

(7) H. A. Z.—Moss agates can be ground on an emery wheel, but should not be ground dry. The proper way is to grind them on a lap of lead or copper with emery and water. Polish with a lead lap and rottenstone, and finish with a leather buff and rouge.

(8) J. M. G. writes: I wish to build a reservoir in which to store water for irrigating, to be circular in form, thirty feet in diameter, and the wall six feet high. My plan is to level and tamp the surface of the ground for the foundation, then drive small piles to the level of the tamped earth, placing them about six inches apart, and on this lay the floor for the reservoir of concrete, and on the floor build a wall of the same material to form the reservoir. A. We cannot see any value in the small piles. They will only disturb the original compactness of the soil by driving. Smooth down the floor on the natural bed of sandy loam, and fill in for the walls with such material as you have, mixed with any coarse gravel or broken stone that may be available. Make the sustaining bank 8 feet high, 18 feet thick at bottom, sloping equally on both sides. Then thoroughly wet the sides and bottom, and proceed to cement the bottom and sides with Portland cement and sand, equal parts well rammed, 3 inches thick. If you have good clay, a floor and sides of clay

8 inches thick, well puddled with a little sand and covered with sand several inches deep, makes a very good reservoir.

(9) W. S. H. writes: The architects of this country (Utah) claim that roofs covered with tin sweat, thus causing the tin to rust, and to prevent this they advise a coat of paint to be put on the bottom of tin before laying. Now, I would like to know if the lumber does sweat, as it is a great hinderance to tinnners to paint before laying. A. It is not the lumber that sweats, but the condensation of water from the moist air in the room upon the cold roof—exactly the same phenomenon as the sweating of an ice pitcher. Your remedy of painting may save the tin from rusting, but will not entirely stop the condensation and dropping of water. A ceiling is the best. Thick roofing felt tacked to the roof sheathing and fitted snugly between the rafters will make you comfortable.

(10) W. G. L. asks: 1. Is coal in any way benefited by the use of water? A friend says that it will last longer and give more heat when wet. Is this so? A. A furnace that has a poor draught will do more work with a small jet of steam from the exhaust carried under the grate. Steam in passing through red hot coal is partially decomposed and carbonic oxide gas formed, which becomes an element of combustion in the fire chamber. There is no saving of coal, as the carbon of the coal is consumed in forming the carbonic oxide gas, but the draught is thus increased. 2. I read the other day of an engine that was run by the explosion of kerosene. Where can I find a description of such a machine? A. Many experiments with petroleum in explosive engines have been made. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 53, for illustrated description of such an engine.

(11) F. G. T.—To deaden the noise of a skating floor, lay on the present floor a cover of roofing felt; on the felt a layer of sand 1 inch thick; on the sand 4 inches square studding, and nail the skating floor to the studding. Have no solid connection between the two floors.

(12) H. W. desires (1) information concerning soluble essence of lemon—how prepared, as used in the manufacture of aerated beverages. A. The essence of lemon may be prepared as follows: Fresh oil of lemons 1 fluid ounce, deodorized alcohol (strongest flavorless rectified) 8 fluid ounces, exterior yellow rind of lemons (fresh) 1/2 ounce; digest 48 hours and filter. The essence of lemon peel, which is often used, is readily made by taking of the yellow peel of fresh lemons 1/2 pound, spirit of wine 1 pint; digest for a week, press, and filter. Said to be very fragrant. You will find in SCIENTIFIC AMERICAN SUPPLEMENT, No. 196, numerous formulas for "Artificial Fruit Essences." 2. Bisulphite of lime, bisulphite of soda, bisulphite of magnesia, as used for the preservation of malt liquors—how made, and what plant is necessary? A. Sulphurous acid is generated by burning sulphur; the fumes thus evolved are passed into the solution of the sulphite through suitable air tight tubes. Ordinary slaked lime suspended in water treated with the gas forms the "bisulphite." The sodium salt is made by treating a solution of sodium carbonate with sulphurous acid gas to saturation. The magnesium salt is probably prepared in a similar manner. No plant is necessary, only a few pieces of chemical apparatus.

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