

(10) E. T. L. asks how the gloss can be brought back on a marble slab upon which some wine has been spilled? A. Repolish the spots or parts of the slab on which the polish has been destroyed with oxide of tin and water, by rubbing with a rag or cushion of cloth. Use the oxide of tin or putty powder as the marble polishers call it, about as thick as cream.

(11) C. P. asks how to put drill and cotton in oil to make them like those sailors' yellow suits and the black horse covers? What kind of paint do you use, and how to fix the oil? A. The materials are first sized and then dipped into oil which has been mixed with yellow ochre for yellow, or fine lamp black for black; only a little color is required. The oil is fixed by drying. Sometimes a little patent drier is used with it.

(12) J. A. F. writes: 1. Wishing to set a pair of return tubular boilers 39' x 14', what height should we have boiler above grates? A. Set the boilers 18 inches above the grate. 2. What size stack? A. Area of chimney or stack, 5 square feet. 3. Where should the bridge wall be, and how close to boilers? A. Bridge wall at back of grate, 6 inches clear from boiler. 4. Should it be filled with dirt back of bridge? A. Do not fill in back of bridge wall. The chamber gathers the heavy ashes, and prevents excessive accumulation in flues. 5. What size of safety valve, either lever or pop valves, should we use? A. Three-inch safety valve of the lever kind. 6. Should we have gauge cocks on one or both boilers? Fuel to be used, hard wood sawdust, with some four-foot slabs? A. Put gauge cocks and water gauges upon both boilers.

(13) W. F. H. says: Please explain the mystery of a horse hair; why it assumes life when kept under water? A. It does not assume life. The horse hair snake, so called, is a worm which is a parasite of crickets and grasshoppers during most of its life.

(14) G. L. G. asks: I would like to know how to boil meerschaum pipe in wax to make it color. What kind of wax and how long to boil it, as well as degree of heat required? A. This is an art that requires considerable skill and is performed as follows: A water bath is filled with pure beeswax in small pieces, and this carefully melted, when the pipe or other article is immersed in it and boiled for from twenty-five minutes to half an hour, when it is removed, the adhering wax wiped off, and the work is finished. The wax must be absolutely pure and is very difficult to find in the market.

(15) G. F. N. asks as to the difference, if any, between carbolic acid and phenic acid; the color in the latter and a seemingly slight difference in the odor of the two acids make me think they are not the same. A. There is no difference between them.

(16) X. Y. Z. inquires: What is the substance called "foliated graphite"? It was mentioned to me as being good for packing stuffing boxes. A. Foliated graphite is the flaky form of pumbago and may be readily bought as such from any wholesale druggist.

(17) C. H. writes: A friend of mine says a planet is a star, and twinkles. I say that a planet is no star, and does not twinkle. Please inform me who is right? A. Planets are not stars. Their light is steadier than that of the stars; but under some conditions of the atmosphere they twinkle.

(18) E. P. C. writes: On page 4,976, of SCIENTIFIC AMERICAN SUPPLEMENT 312, the author of an article on Electric Light Apparatus states, that "the troughs" (for the battery) "are made of mahogany, put together with brass screws, and well saturated with an insulating compound which also makes them acid proof." Will you please tell me through your notes and queries column of a suitable insulating compound, and the method of applying it? Would paraffine do? A. Yes.

(19) J. H. P. writes: During spring and berry time robins were very numerous, but for many weeks I have not heard or seen one, yet almost always just as winter sets in, or after the first snowfall, they appear again and are often seen eating frozen apples and mountain ash berries. Where do they spend the long fall vacation? A. Robins are abundant in spring, going north. Those that stop to breed scatter, but do not go far from their breeding places. The fall abundance is due to their massing for migration, the flocks being re-enforced by migrants from the north.

(20) J. L. H. asks: What is the right width amidships and depth forward and aft for a tug boat 56 feet long over all? Also right dimensions of an upright boiler, number and size of tubes, thickness of iron boiler plate and boiler heads. Dimensions of fire box. Also diameter and length of engine cylinder required to drive boat 12 knots per hour. Also diameter and pitch of propeller and number of blades. And diameter of iron shaft? A. 56 feet on water line by 13½, or 13 feet beam by 5 feet 9 inches hold. Engine, 12 x 12 inches. Vertical tubular boiler, 5½ feet diameter, 7 feet 8 inches high, with 150 2-inch tubes. Propeller, 5 feet diameter and 7¼ feet pitch; 4 blades. Shaft, 4½ inches diameter.

(21) B. F. B. asks: Is it more economical to heat a private residence with steam than by hot air? If so, is it a better heat and more conducive to health than hot air? What are the objections to steam for the purpose of heating private residences by steam heaters? What proportion of private residences in your city are heated by steam heaters to hot air furnaces? I have heard it said that a large proportion of dwellings in the Eastern cities are heated by steam heaters. Is this so? A. It is more economical to heat small houses with hot air furnaces, provided they are of the best kind. There is no economy in purchasing small, cheap heaters. Steam apparatus is considered the most healthy, because there is less liability to vitiation of the air by escaping gas, but there is no reason why a well made furnace should not be perfectly healthy. Thousands of private residences in the Eastern and Middle States are heated by steam apparatus with perfect satisfaction and safety, the pressure in the boilers being only from one-half to five pounds, seldom beyond ten pounds.

(22) J. B. & B. write: We have put in our store recently some show windows; in the inside we have during the evening lamps burning. In order to let the steam out we have bored six holes in the sash, and yet the steam settles on the window as ever. What is the cause of that? A. The condensation is due to warmth inside of the window. In order to prevent con-

densation, the air space between the outside and inside windows must be kept cool so that the air inside will have about the same temperature as the air outside. By arranging holes of sufficient size top and bottom, you can secure a sufficiently cool temperature to keep the glass always clear.

(23) C. T. S. asks: What is the best way to build an ice house, and which is the best way to pack ice? A. The usual way of building ice houses is to put up a rough frame, so as to make the inside and outside boarding six, eight, or ten inches apart, according to the location and size of house; the thicker the better. Fill in with hay and pack close as the frame is boarded up. The roof should also be double. If the soil is porous or the position such that the floor can be drained, it is sometimes found economical to sink the house below the level of the ground several feet, and bank around with the dirt thrown out of the cellar. In packing the ice, hay, and preferably sawdust if it can be obtained, are used. The main point is to exclude air and heat; keep a thickness of one foot of packing all around next the sides. Batten the outside boarding, or if you can afford it cover the outside of the frame with tar paper or felt.

(24) S. T. M. asks: How are type writer ribbons made? What composition is used? A. The ribbons are moistened with aniline colors dissolved in glycerine.

COMMUNICATIONS RECEIVED.

How to preserve a safe and its contents from fire and burglary, by G. P. H.

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.

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Woodworking Mach'y. Bentel, Margedant & Co., p. 350.

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The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 350.

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For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 349.

Gould & Eberhardt's Machinists' Tools. See adv., p. 350.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 350.

Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 350.

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Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 350.

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Lubricator. See advt., Detroit Lubricator Co., p. 318.

Bostwick's Giant Riding Saw Machine, adv., page 318.

See New American File Co.'s Advertisement, p. 318.

Steam Pumps. See adv. Smith, Vaile & Co., p. 316.

The Sweetland Chuck. See illus. adv., p. 318.

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