

Business and Personal.

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The young men of this country should read the editorials of Baldwin the Clothier in *Baldwin's Monthly*. The best business maxims we have ever seen may be found in the July number of this excellent periodical, which is just issued from the Northeast corner of Canal street and Broadway, New York.

600 New and Second-hand Portable and Stationary Engines and Boilers, Saw Mills, Woodworking Machines, Grist Mills, Lathes, Planers, Machine Tools, Yachts and Yacht Engines, Water Wheels, Steam Pumps, etc., etc., fully described in our No. 12 list, with prices annexed. Send stamp for copy, stating fully just what is wanted. Forsaith & Co., Machine dealers, Manchester, N. J.

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"Abbe" Bolt, Forging Machines, and "Palmer" Power Hammers; best produced. Prices greatly reduced. Also sole builders Village and Town Combined Hand Fire Engines and Hose Carriages, \$350. Send for circulars. Forsaith & Co., Manchester, N. H.

For 13, 15, 16, and 18 in. Swing Screw-Cutting Engine Lathes, address Star Tool Company, Providence, R. I.

John T. Noye & Son, Buffalo, N. Y., are Manufacturers of Burr Mill Stones and Flour Mill Machinery of all kinds, and dealers in Dufour & Co.'s Bolting Cloth. Send for large illustrated catalogue.

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For Best Presses, Dies, and Fruit Can Tools, Bliss & Williams, cor. of Plymouth and Jay Sts., Brooklyn, N. Y.

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All nervous, exhausting, and painful diseases speedily yield to the curative influences of Pulvermacher's Electric Belts and Bands. They are safe and effective. Book, with full particulars, mailed free. Address Pulvermacher Galvanic Co., 292 Vine St., Cincinnati, Ohio.

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Machine Diamonds. J. Dickinson, 64 Nassau St., N. Y.

More than twelve thousand crank shafts made by Chester Steel Castings Co. now running; 8 years' constant use prove them stronger and more durable than wrought iron. See advertisement, page 46.

Emery Grinders, Emery Wheels, Best and Cheapest, Hardened surfaces planed or turned to order. Awarded Medal and Diploma by Centennial Commission. Address American Twist Drill Co., Woonsocket, R. I.

To Clean Boiler Tubes—Use National Steel Tube Cleaner, tempered and strong. Chalmers Spence Co., N. Y.

Reliable information given on all subjects relating to Mechanics, Hydraulics, Pneumatics, Steam Engines, and Boilers, by A. F. Nagle, M. E., Providence, R. I.



F. B. N., who asks about the carpet-eating bug, see p. 307, vol. 35.—C. A. D. will find the answer to his query in any work on Natural Philosophy.—P. H. R. had better consult his family physician.—C. H. McK. will find full information about suction pumps in No. 20, first series of "Practical Mechanism."—A. K. Q.

can ascertain how high the water will rise by survey. He does not state how much fall there is in the distance he mentions.—T. M. is informed that he will find the description and cut of the electric candle in vol. 36, No. 22. The candles are not made in this country.—O. H. Y. had better correspond with makers of band saw machinery.—Novice, London, Canada.—You can lay your tiles upon a floor of cement.—J. V. C. and H. B. are referred to "Smee's Electro Metallurgy."—J. H. S.—We know nothing of the instrument you mention.—J. L. G. is referred to his family physician.—W. H. P. had better insert a notice in the "Business and Personal" column for information concerning the market formo-hair.—M. M. M. does not tell us how large a cylinder he wishes to cast. If small, brass or Babbitt metal would answer.—P. C. is informed that his article is too vague for publication.—Chemist is informed that we know nothing of the compound mentioned.—J. S.—You are probably correct. The tree protects the building from being struck by lightning.—J. V. E.—The powder you refer to is not yet manufactured in this country.

(1) W. G. S. says: I have among my photo-chemicals a bottle with the mark *Essence Grasses*. Can you tell me what it is, and what it is used for? A. We do not know of any reagent so called. The title refers to a thick, fatty oil or liquid.

(2) J. E. is informed that the vacuo method of filtration is entirely feasible; but where large bodies of water are to be filtered, as for the supply of cities, it has the objection of being very expensive, from the extra steam power required and the necessity of frequently changing the filtering materials. Besides this, water thus filtered is rendered unpalatable and unfit for immediate use by the removal of much of its dissolved gases, etc. For these reasons preference is generally given to the system of reservoirs, wherein the water is allowed to remain quiescent for a sufficient length of time to deposit most of the matter held in suspension, and admit of the more complete oxidation of such organic matter as it may contain by contact with the air.

(3) B. S. asks: Should boilers used only for heating be left with water in them during warm weather? A. No; the water should be drawn off in the spring.

(4) J. F. D. asks: Please give me a recipe for making a colored lime-wash, to be used as a substitute for paint for the exterior of a frame building. The color required is brown. A. Add to the lime-wash a strong solution of sulphate of magnesia, and color to suit with Van Dyke brown.

(5) N. K. says: A favorite dog has put our family into possession of (in both senses) ten millions (estimated) of fleas. The dog has been given to a friend (with due warning, of course), but the dog's late companions are still with us in scarcely diminished numbers. Will you please say how we can best succeed in obtaining their room instead of their company. The dog was kept generally in the cellar, and the coal heap especially has "millions in it." A. Soap water; carbolic acid in dilute alcoholic solution; flowers of sulphur either used as a powder or mixed by agitation with water containing a little glycerin; dilute solutions of sulphate of magnesia—any powder or solution containing tannin, as dried sumac, tea, and Persian insect powder. These are the least objectionable exterminators. A little of the carbolic solution may be mixed in with the soap water, and this used as a wash, or sprinkled in infested localities. Flowers of sulphur contain sulphurous acid, which is fatal to the insect, but it must not be used on or near colored woolen fabrics, as it is liable to injure the colors. Sulphate of magnesia solution (in water) may be used as a wash. Sumac powder, etc., give excellent results. The sulphur mixture mentioned, or carbolic acid shaken up with about 20 parts of water, and sprinkled in the cellar, will soon depopulate the coal heap.

(6) An apprentice asks for the best method of laying tile pavement? A. If you have reference to tile laying upon floors, it is done by cutting in boards between the floor joists, and supporting them upon cleats nailed to the sides of the joists. A pavement of bricks in mortar is then laid upon the boards, finishing flush with the top of the joists. A bed of rich cement mortar is then spread over the whole, and the tiles carefully set in a thin grout upon the cement bed.

(7) D. W. Van B. asks: Can you inform me as to the time when the first movable steam fire engine was used? It is stated that a machine was used in Europe in 1851, and was used to supply hand engines. It was taken to the river and water forced through hose to the hand machines. Were steam engines used in this country prior to that time? A. Captain Ericsson built a steam fire engine at Braithwait shops about the year 1836.

(8) H. D. S. asks: Will a solution of chloride of zinc and sulphate of nickel, used for nickel plating iron and steel, serve for nickel plating brass or zinc. The process was described on p. 408, vol. 36. A. Not very well, unless the article is in contact with pieces of zinc, or, what is better, zinc powder, also immersed in the solution. Small pieces of brass work can be plated in this way.

(9) C. E. asks: How can I imitate silver gray in water colors? A. White tempered with a mixture of black and blue is commonly employed. Use flake white, ivory black, and Prussian blue.

(10) K. F. says: We use on our two horse cultivators a plow plate that seems to be made of iron with a thin plate of steel welded or laid on the front, and made very hard. Our blacksmiths have difficulty in sharpening them. They sometimes crack when heating, and sometimes fly to pieces when put in the water after sharpening. Can you tell us how to manage them? A. Heat them to a low red heat, dip in water at 100° temperature and containing 1 lb. salt per gallon; dip edgewise, and hold quite still at the bottom of the water until cold. A depth of two inches of oil floating on the water would perhaps assist you.

(11) J. D. E. says: 1. I am making a plate electric machine, and have the plate already cut out. Do the edges need to be ground smooth? A. It is better to have them rounded. 2. Of what material should the

rubbers for exciting the plate be made of? A. See (No. 9) p. 171, vol. 35. 3. Can you mention a good and short method for drilling a hole through plate glass? A. See Ans. No. 5, p. 186, vol. 36.

(12) D. M. F. says: I am using a small cast iron tank to contain kerosene. It has been japanned, but the oil works its way through the iron, notwithstanding the japan. Can you tell me what will stop this? A. Try a sizing of glue in acetic acid.

(13) H. L. L. says: I desire a cheap shelter for say 250 to 300 tons of hay or straw, and I wish to construct it at once. A. The usual graduated roof shelter will answer the purpose. This consists of a roof of thatch or shingles, pyramidal, on a strong frame, supported at each corner on stout pins, passed through holes in timber posts set well into the ground. The roof may be about 15 feet square, and the posts 20 feet high—these latter may have lateral braces or ties, extending diagonally across the square at the bottom. As the hay is removed from the top of the stack, the roof is lowered down and the pins shifted into lower holes, thus always affording a close shelter to the hay.

(14) S. H. asks: Is there any radiator or heater (steam) made which operates without the removal of the air from its interior? A. We do not know of any. It is essential to the success of a radiator that the dead air within it be displaced either by steam or water.

(15) J. A. B. asks: Can you give me a recipe for a cement to mend a broken marble slab? A. Take gum arabic 1 lb., make into a thick mucilage, add to it plaster of Paris 1 1/4 lb., sifted quicklime 5 ozs. Mix well. Heat the marble and apply the mixture. You had better put supports under the slab.

(16) T. F. P. says: I have samples of the enamel which are used in enameling. How can I use them? A. Mix together equal parts of oxide of manganese, oxide of copper, and oxide of cobalt. Use a soft glass, and fuse enough of the mixture into it to give the desired depth of color; then grind this to a fine powder, and apply with water as a paste; after which dry and fuse. For white, fuse with the glass oxide of tin and antimony, as before. Alumina and oxide of lead may also be used.

(17) J. G. A. asks: Can you tell me where the difficulty is in launching a boat off a vessel at sea, and did the United States Government adopt any apparatus when they had the trial about two years ago? A. The difficulty lies in detaching the boat to keep it clear of the tackle when it strikes the water, for if one end detaches before the other, it is apt to swing from the detached end and turn over. We do not think that any boat detaching apparatus has been exclusively adopted by the United States Government, though several have been reported upon.

(18) E. E. L. asks: Is there anything that can be used in place of muriatic acid for soldering iron with soft solder? A. Sal ammoniac will answer.

(19) W. A. B. says: I recently saw a statement that the relative traction of a belt on a wooden or iron pulley was as 47 to 24. Now, is this a fact? Will a wooden pulley do twice the work of an iron one? If so, why? A. There is a difference in favor of wooden pulleys, but cannot state its amount.

(20) R. K. asks: 1. Can you give me a mixture of something that will stick a piece of lead in the centers of locomotive driving axles without burring them with a chisel, as doing so injures the centers. A. The lead will stick in of itself when well hammered in. 2. Is there any rule to get the throw of locomotive eccentrics, or can I find it in any book? A. See "Auchincloss" on the slide valve.

(21) W. T. asks: I would like to know what makes steel crack in hardening? A. Improper heating or dipping and taking the article out of the water too soon are the principal causes. Sometimes the steel is improperly forged, or overheated in forging. Much also depends on the shape of the article when finished.

(22) H. F. H. asks: What is the best preparation to put on a greenhouse floor of wood, so as to render it impervious to moisture and prevent it from warping and cracking? Also what is the preparation to paint hot water pipes in a greenhouse to prevent rust? A. Cover your floor with a thin layer of hydraulic lime or cement. Paint your pipes with a covering of asphaltum varnish, made by dissolving asphaltum in turpentine by a gentle heat.

(23) E. H. L. says: I am making a safe to keep valuable papers in, and wish to put in a filling that will make it fireproof. What is the best preparation for that purpose? A. The preparation usually employed for filling safes is calcined plaster of Paris mixed with water to the consistency of thick cream, and allowed to harden. It would be advisable to coat the surface that would come in contact with the wet filling with the asphaltum varnish recommended to H. F. H. This will prevent rusting the iron plates of the safe.

(24) F. M. says: Tobacco stalks or stems, as stripped from leaf tobacco by cigar makers, can be had very cheap in Cuba. Is there not some use or application for them, chemically or otherwise, beside the manufacture of snuff? A. We know of no extended use for such product.

(25) W. G. F. says: Please tell me how to braze with brass and use hard and silver solder with blowpipe? A. To braze with hard or silver solder, file the metal clean and smooth where the intended union is to be, bring them in close contact, apply the solder in small pieces and fuse, using borax as a flux. 2. How can I restore temper to spring steel when once drawn or heated? A. To restore the temper of steel, it must be hardened and then drawn to the requisite spring temper.

(26) D. L. asks: Can I ignite gunpowder by using a galvanic battery? A. If a fine platinum wire be interposed between the wires that are connected with the poles of the battery, it will be heated sufficient to ignite gunpowder.

(27) W. R. asks: How can I make a good branding ink for branding bagging—such as is used for

baling cotton? I have been using an ink made from lampblack and kerosene, but this blurs very badly and gives our bagging a dirty appearance. A. Try common bootblackening. Dampen your brush with water to use it. If there is acid in the blacking it will eventually injure your brass stencil plates.

(28) O. P., of Kosloff, Russia, asks: How can I color polished steel a dark blue? A. See reply to B. T., in this number.

(29) W. T., of Montreal, is informed that the address of the publishers of the work on Grave-stones is A. T. Bickwell & Co., 27 Warren street, New York city.

(30) W. H. C. says: Perhaps the following mode of fluting reamers, cutters, taps, etc., may be new and useful to some mechanics, especially those that possess a lathe with slide rest. I leave a work to be fluted in lathe centers, and with tool of the desired shape of flute fastened in the tool post, work the slide rest back and forth, feeding the tool in to the required depth. Mine is a back geared screw cutting lathe, and I have very satisfactorily and with dispatch fluted reamers, etc. A snap catch fitting tooth of back gear holds the work while cutting. The gear also acts as index wheels which can be divided into 4ths, 8ths, 10ths, 16ths, etc. The heads of lathes that are not back geared can easily be divided up for all ordinary work.

(31) C. F. makes inquiry about seasoning lumber, and is answered that the most successful builders, piano manufacturers, etc., generally season their lumber in the natural way, by stacking it in their yards for two years or more, which in the majority of instances is the most satisfactory in the end. There are cases where water soaking is adopted to drive out the sap. The logs are left in the water for six months, then taken out and sawed into boards, and the latter stacked up to dry. In this case, it is claimed, the water rapidly dries out and takes the sap with it.

(32) F. M. says: Can you give me any cheap method for renovating tarnished gilt frames? Any color or material will do, provided it is simple and cheap. A. The cheapest is to cover the surface to be gilded with oil size thinned with spirits of turpentine. Gold, in powder, is then gently dabbed in with a little pod of soft leather. The work can be varnished.

(33) C. E. L. asks: What can I mix with asbestos that will make it as pliable as leather after it is pressed in any form? A. Try mixing it with rubber and then vulcanize.

(34) F. L. asks: Can you inform me how to tin small cast iron articles? A. Immerse the articles in a bath of sulphuric acid for a time sufficient to obtain a bright surface, then dip in muriate of zinc, remove and plunge in a bath of melted tin.

(35) J. R. asks: What is the number of locomotives built in the United States that have been shipped to Russia? A. We cannot ascertain.

(36) J. Y. asks: Please give me a recipe for making a good black ink that will copy? A. Add sugar 1 oz. to 1 1/2 pint of good common writing ink.

(37) J. K.—A brass founder will give you the information relative to gongs. Oil can be colored by putting alkanet root into it.

(38) J. B. asks: What can I use to keep patterns from sticking in plaster of Paris moulds? A. If the patterns are so made that they have a sufficient draught, coat them with thin shellac varnish.

(39) H. Y. C. asks: Where do the oyster and other shellfish get the lime from which to make their shells? A. The lime salts are held in solution in the water, and derived from it by the animals.

(40) H. K. asks: Can you give me a recipe for straightening amber mouthpieces? A. Heated oil will soften amber and make it pliable. To melt it requires a heat of 517° Fah.

(41) W. E. T. says: Having seen a notice of Professor F. Sacc's (Neufchatel, Switzerland) process for curing meat by submitting it to the action of acetate of soda, I should like to know the *modus operandi*. A. The mode of operation is very simple. Arrange the meat in a barrel, deposit about and on it powdered acetate of soda to about the quarter of the weight of the meat. In summer the action takes place immediately; in winter it is necessary to place the vessels in a room warmed to about 68° Fah. The salt absorbs the water of the meat; after 24 hours the pieces are turned, and the lower placed uppermost. In 48 hours the action is finished, and the pieces are packed in barrels with their brine, or dry in the air. If the barrels are not full, it suffices to fill up with the brine made by dissolving one part (by weight) of the acetate of soda in 3 parts of water. The pieces may be of ordinary size, and when required for use may be freed from the salt by washing in running water. The dry acetate of soda may be recovered from the brine by evaporating off the water over a fire.

(42) G. M. C. asks: How can I color buck and goat skins black? A. Soft water, 5 gallons; bring to a boil, and add 8 ozs. of logwood extract, pulverized; boil three minutes, remove from the fire, and stir in 2 1/2 ozs. gum arabic, 1 oz. bichromate of potash, and 80 grains of prussiate of potash.

(43) H. C. asks: Please give me directions for polishing shells? A. The outer skin of sea shells can be removed by washing with a rag dipped in hydrochloric acid, then wash in warm water, and polish with rottenstone or fine tripoli powder, applied with a little oil on a bit of soft rag. Where there is opportunity to do so, rub with lump pumicestone moistened with water, and finish as above.

(44) D. C. R. is informed that he can paint his smokestack with coal tar or asphaltum varnish. The varnish can be made by dissolving the asphaltum in turpentine with a gentle heat. Apply with a brush.

(45) J. D. P. & Co. say: We have a six inch belt which we gave two or three coats of lard oil, and now cannot use it because it slips on the pulleys. A. Wash your belt with a weak alkali or soda water, and then in clean water. Let it dry thoroughly before put-