

Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion.

Wanted.—To Purchase a Washing Machine to wash the Cotton from Delaine Rags, after they have been processed to extract the wool. Address Joseph Wilkins, P. O. Box 463, Baltimore, Md.

The Turbine Wheel made by Risdon & Co., Mt. Holly, N. J., gave the best results at Centennial test.

North's Patent Universal Lathe Dog; folds all shapes; always in balance; stands up square with the work, and will not "skew." S. G. North, 440 N. 12th St., Phila., Pa.

Having discovered a Bullet-proof Material for Lining Uniforms (caveat filed), I desire a party to furnish funds to procure American and Foreign Patents, for an interest in the Invention. Address P. O. Box 1,950, Philadelphia, Pa.

Situation wanted by a competent Machinist, Engineer, and Tool Maker. Can build, set, or superintend the building of Machinery of any description, light or heavy. Will go West or South for responsible parties. Address for one month, S. F. Smith, East Setauket, Long Island.

For Sale.—9 ft. Planer, \$400; 8 ft. do., \$190; 30 in. Screw Cutting Lathes, \$235; 18 in. do., \$195; at Shearman's, 132 N. 3d St., Philadelphia, Pa.

2d Hand Iron Plane built by Smith of Salem. Plane 13 ft. x 30 in.; price \$375. A. C. Stebbins, Worcester, Mass.

Electrical Goods of every description, Annunciators, Bells, Batteries, Wire, Electro-plating Apparatus, etc. Finger, Risteen & Co., Melrose, Mass.

For Sale.—An Elevator, with Carriage, suitable for a Hotel. Apply to Morgan & Co., 154 South 4th St., Philadelphia, Pa.

Makers of Tire Benders address W. Churchill, 493 Greenwich St., N. Y.

I wish to confer with practical Glass Makers. H. W. Sindorf, Black Water, Florida.

Wanted.—A Second-hand Engine, 12 to 16 H. P., with boiler, etc. complete. Cheap for cash. Address J. C. Bosworth & Co., Mason City, Iowa.

Blake's Belt Studs are stronger, cheaper, and more durable than any fastening for Rubber and Leather Belts. Baxter's Adjustable Wrenches fit peculiar corners. Manf. by Greene, Tweed & Co., 18 Park Place, N. Y.

The Best Mill in the World, for White Lead, Dry, Paste, or Mixed Paint, Printing Ink, Chocolate, Paris White, Shoe Blacking, etc., Flour, Meal, Feed, Drugs, Cork, etc. Charles Ross, Jr., Williamsburgh, N. Y.

The Niles Tool Works, Hamilton, O., have second-hand Machine Tools in first class order for sale.

Noise-Quelling Nozzles for Locomotives, Steamboats, etc. T. Shaw, 915 Ridge Ave., Philadelphia, Pa.

For New Illustrated Catalogue of Foot Lathes, Scroll Saws, Small Steam Engines and Amateur's Tools, send stamp to Chase & Woodman, Newark, N. J.

Shaw's Mercury Gauges, U. S. Standard of Pressure, 915 Ridge Ave., Philadelphia, Pa.

Bolt Forging Mach. & Power Hammers a specialty. Send for circulars. Forsaith & Co., Manchester, N. H.

For Town & Village use, Comb'd Hand Fire Engine & Hose Carriage, \$350. Forsaith & Co., Manchester, N. H.

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.

Power & Foot Presses, Ferracute Co., Bridgeton, N. J.

Solid Emery Vulcanite Wheels—The Solid Original Emery Wheel—other kinds imitations and inferior. Caution.—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

Steel Castings from one lb. to five thousand lbs. In valuable for strength and durability. Circulars free. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

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

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing metals. E. Lyon & Co., 470 Grand St., N. Y.

Weldless Cold-drawn Steel Boiler and Hydraulic Tubes. Leng & Ogden, 212 Pearl St., N. Y.

Silver Solder and small Tubing. John Holland, Cincinnati, Manufacturer of Gold Pens and Pencil Cases.

Diamond Drills, J. Dickinson, 64 Nassau St., N. Y.

Chester Steel Castings Co. make castings for heavy gearing, and Hydraulic Cylinders where great strength is required. See their advertisement, page 30.

Patent Scroll and Band Saws. Best and cheapest in use. Cordesman, Egan & Co., Cincinnati, O.

For Boults' Paneling, Moulding, and Dovetailing Machine, and other wood-working machinery, address B. C. Machinery Co., Battle Creek, Mich.

Boulter's Superior Muffles, Assayers and Capellers Portable Furnaces, Slides, Tile, Fire Brick and Fire Clay for sale, 1,609 North St., Philadelphia, Pa.

Corliss Engine Builders, with Wetherill's improvements, Engineers, Machinists, Iron Founders, and Boiler Makers. Robt. Wetherill & Co., Chester, Pa.

Gun and Sewing Machine Tools. Pratt & Whitney, Hartford, Conn.

Caution to the Public.—To avoid imposition, purchasers of Waltham Watches will observe that every genuine watch, whether gold or silver, bears our own trade mark on both case and movement. Gold cases are stamped "A. W. Co.," and guarantee certificates, signed Robbins & Appleton, accompany them. Silver cases are stamped "Am. Watch Co., Waltham, Mass., Coin Silver," or "Am. Watch Co., Waltham, Mass., Sterling Silver," according to quality, and are accompanied by guarantee certificates, signed R. E. Robbins, Treasurer. The name "Waltham" is plainly engraved upon all movements, irrespective of other distinguishing marks. This caution is rendered necessary by reason of the fact that our cases are frequently separated from our movements and put upon worthless movements of other makers, and vice versa, thus affecting injuriously the performance of the watches. Every buyer should make a close inspection, as indicated. American Watch Company, by R. E. Robbins, Treasurer.

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

C. C. Phillips, 4,048 Grand Ave., West Phila., manufactures Vertical and other Burr Mills adapted to all kinds of grinding; also Portable Flouring Mills.

Murtagh's Dumb Waiters, Hoisting Machines, and Invalid Safety Elevators, of approved patterns. Isaac Richards, 2,217 Chestnut St., Philadelphia, Pa.

Magic Lanterns, Sciopticons, Stereopticons and Views. The best at lowest prices. Illustrated catalogue, 140 pages, 10 cts. Second-hand catalogue, 10 cts. Circulars free. Theo. J. Harbach, 809 Filbert St., Philadelphia, Pa.

Wanted.—A First-class Foreman to take charge of a very extensive Machine Shop and Foundry. Address P. O. Box 2,307, Philadelphia, Pa.

Agents both Men and Women are doubling their money, selling new and useful Household patents for L. E. Brown & Co., 242 Elm Street, Cincinnati, O. Write them for Terms.

Friction Clutches warranted to save Rolling Mill Machinery from breaking. Also Hoisting Machines and Safety Elevators. D. Frisbie & Co., New Haven, Conn.

For Solid Wrought Iron Beams, etc., see advertisement. Address Union Iron Mills, Pittsburgh, Pa., for lithograph, etc.

Felt of every description for Manufacturers' purposes, especially adapted for Polishing, can be furnished in any thickness, size, or shape. Tingle, House & Co., Manufacturers. Salesroom, 69 Duane St., N. Y. Factory at Greenville, Conn.

The Best Cornice Brake. J. M. Robinson & Co., Cinn. Improved Wood-working Machinery made by Walker Bros., 73 and 75 Laurel St., Philadelphia, Pa.

Yacht Engines. Complete with Boiler from \$75 upwards. Geo. F. Shedd, Waltham, Mass.

Ice Machines. Clayton & Cook, Daretown, N. J.

Bound Volumes of the Scientific American.—I have on hand about 20 bound volumes of the Scientific American, which I will sell (singly or together) at \$1 each, to be sent by express. See advertisement on page 29. John Edwards, P. O. Box 773, N. Y.

Moles & Queries

(1) N. K. L. asks for a recipe for removing sandruff? A. Sesquicarbonate of ammonia, 1 oz.; spirit of rosemary, $\frac{1}{2}$ pint; rose of elderflower water, $\frac{1}{2}$ pint.

(2) In answer to C. E. H., who asks us as to the cure for epilepsy, and to several others who ask medical advice, we beg to state that such information is outside our field, and that the only counsel we ever give relating thereto is for the writer to consult a competent physician.

(3) R. E. C. asks for a recipe for making japans? A. For black japan grounds mix shellac varnish with either ivory black or lampblack; but the former is preferable. These may be always laid on with the shellac varnish and have their upper or polishing coats of common seed lac varnish. A common black japan may be made by painting a piece of work with drying oil and heating it in a stove that is hot enough to change the oil black without burning it.

(4) In answer to C. E. B., who inquires whether diphtheria originates in infection? A. You will find that exhaustive researches have been made on this subject—the connection of diphtheria with certain vegetable organisms. See Tremssen's "Cyclopedia of Medicine," vol. 1, pp. 569–699.

(5) J. H. says: As light and heat are not the same, through what medium do they travel from the sun? A. Light and radiant heat are physically identical. They differ chiefly in the distinct physiological sensations they produce on us, and therefore vary not more, perhaps even less, than violet light does from red. The medium of the vibrations of light is a supposed imponderable ether which fills interstellar space.

(6) A. H. S. asks for a recipe for making ink rollers that will not dry or harden? A. Summer use, $\frac{1}{2}$ lbs. best glue and 4 lbs. molasses; winter use, 1 lb. best glue and same amount of molasses. Soak the glue $\frac{1}{2}$ hours if thick, or 1 hour if thin. Lay it on a board until next day, then melt down. Have as little water in the glue as possible. Add the molasses, let boil once, and keep just under the boiling point for two hours. Pour into well cleaned and greased moulds. The above quantities are sufficient for an 18 inch roller; other sizes in proportion.

(7) J. C. S. says: My printing press passed through a large fire and has become very rusty. What can I use to remove it? A. Use an emery block. 2. What kind of paint shall I use after having removed the rust? A. Ordinary lead colored paint.

(8) E. B. is informed that his idea of a rubber check valve in a hydraulic ram is not new, but on the contrary is already patented.

(9) W. W. asks for a good cheap imitation of silver? A. Tin 3 ozs., copper 4 lbs.

(10) O. J. M. asks: 1. What is the best way to soften steel, or old files, for small work? A. Heat to a red and cool in slaked lime. 2. Will it hurt an emery wheel to use water on it while grinding? A. Some emery wheels can be used with water, and some cannot.

(11) H. C. B. asks (1) how to clean files when they are filled with hard wood? A. Use a piece of thin copper across the file and in the rows of the teeth. 2. How to clean paint from tin boxes? A. Use benzine to wash them out.

(12) H. W. asks for the proper length of a connecting rod compared with the stroke of engine? A. Not less than three times the length of pistons stroke.

(13) L. says: Can you give me the dimensions of a catamaran, say 20 feet long? Please state full particulars. A. See working drawings and full particulars for construction of Catamarans in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 105 and 106. To be had at this office and of newsdealers generally. Price 10 cents each.

(14) E. W. asks: How is impression paper made that is used to transfer designs on to black walnut? A. Rub smooth writing paper with a mixture of lead and black lead. Leave it to dry and next day wipe off any excess with a rag.

(15) M. R. asks what the composition is that strikes fire at the end of cartridges? A. It is the fulminate of mercury, made by treating mercury with nitric acid, and then with alcohol.

(16) W. T. S. asks for a recipe for starching and ironing fine shirts and collars? A. Rinse the articles in three waters, dry them and dip them into thick made starch which has previously been strained through a piece of muslin. Squeeze them, shake them gently, and again hang them up to dry. When they are dry, dip them twice or three times into clear water, squeeze them, spread them on a linen cloth, roll them up in it, and let them lie an hour before ironing them. If gloss is desired put a piece of paraffin about as big as a hazel nut in the starch.

Is there any known process by which the beetle can be prevented from depositing their eggs in peas? A. We know of none. Address Agricultural Bureau at Washington.

Is there any known process by which iron or steel can be welded to copper? A. You may braze copper or iron or steel by the spelter brazing process.

(17) G. M. K. asks for a recipe for making a boot polish blacking? A. India rubber in small pieces, 18 ozs.; hot rape oil, 1 gallon; dissolve. Add ivory black, powdered, 60 lbs., molasses 45 lbs. Mix, add 1 lb. gum arabic dissolved in 5 quarts of vinegar. Grind to a smooth paste in a color mill and add oil of vitriol 12 lbs. Stir daily for a week and put up in cans or pots.

(18) A. P. W. asks how to true an emery wheel? A. Some emery wheels will turn with a red hot iron, others may be wet and trued with a turning tool or old file.

What can be used to prevent a gun barrel from rusting? A. Purelard oil. Other questions repeatedly answered in back numbers.

(19) W. J. N. asks for the best way to clean shoe polishing brushes? A. Try washing in vinegar.

(20) N. T. P. asks how rifle and shot gun barrels are polished so highly on the inside? Also how the grooves or furrows are cut out so smoothly in rifle barrels? A. The bores are polished in the boring by the reamer. The grooves are cut by a rifling machine.

(21) C. S. asks: What good and cheap anti-septic can I use to preserve specimen fruits with (by putting them in jars and bottles) so that the quality of same will allow of their being used for cooking, etc.? A. You may try a solution of salicylic acid in water—15 or 20 grains to the gallon. The solution is perfectly transparent, and fruit immersed in it will preserve its natural appearance for a very long time. The taste of fruit thus treated is not materially altered nor its wholesomeness affected.

(22) C. R. J. asks what he can use to scent bait with to draw rats to a trap? A. Old cheese or oil of aniseed are considered among the best.

(23) B. F. asks whether the bite of a dog that is not mad will produce hydrophobia? A. This is an open question, authorities not agreeing. It is always best to take every precaution, and especially thoroughly to cauterize the wound.

(24) W. E. M. asks: 1. What is it that makes a meerschaum pipe color? A. Its permeation with the dark oily matter from the tobacco. 2. What will make it color fast? A. Boiling in wax. 3. What will cement amber? A. Finest pale orange shellac (broken small) 4 ozs.; strong rectified spirit, 3 ozs. Digest in a corked bottle in a warm place until dissolved.

(25) P. V. D. asks how to cover boots with India rubber, so as to make them waterproof? A. Melt, at a gentle heat in a porcelain vessel, 3 ozs. of spermaceti, and dissolve in this 6 drachms of gum rubber (caoutchouc) cut into shreds. Then add 8 ozs. of seriatim of tallow, 2 ozs. of lard, 4 ozs. of amber varnish and a small quantity of ivory black. Give the leather several coats, and polish with a blacking brush. Solutions of rubber, excepting that in melted naphthalene, do not work very well alone on leather.

(26) C. E. H. asks: What are the best ingredients to use in connection with pumbago for stove polish? A. Solution of pure asphaltum and powdered black pyroxene or cupric oxide.

(27) Old Reader asks if there is any way of bending black walnut? A. Steam or soak the timber and let it dry while bent to the required shape.

(28) J. S. asks for the following recipes: 1. To dye black? A. Allow 1 lb. of logwood to each lb. of goods to be dyed. Soak it over night in soft water, then boil 1 hour and strain the water in which it is boiled. For each lb. of logwood dissolve 1 oz. of blue vitriol in lukewarm water sufficient to set the goods. Dip the fabric in, and when saturated with the vitriol solution turn the cloth into the logwood dye. If cotton, boil 10 or 15 minutes; if silk or woolen, keep at scalding heat only for 20 minutes. Drain without wringing, dry in air, and set the color by immersion in salt and water. One teaspoonful of salt to 3 gallons of water. 2. To dye dark blue? A. Give the goods a mordant of tartar, lift, add a little chromate of potash; again work for 15 or 20 minutes and rinse; next boil in a bath of logwood, adding toward the last a few grains more of chromate, again boil and finish. The whole quantity of chromate used should not exceed $\frac{1}{4}$ oz. to each lb. of logwood taken for the bath. Very dark. 3. To bring out grain to the surface of walnut? A. Oil it. 4. To polish black bronze? A. Clean and polish the surface. Apply jeweler's rouge made into a smooth paste with water. When dry place the object on a common fire shovel and expose it over a clear fire for about one minute. Lastly, when cold, polish with a plate brush. 5. To extract grease from leather without injuring the same? A. Ammonia 2 ozs., soft water 1 quart, saltpeter 1 teaspoonful, shaving soap 1 oz. Mix and apply. 6. What com-

position is used in making printing inks? A. The varnish is composed of linseed oil 20 gallons boiled in an iron pot. Soon after the smoke begins to rise, this is ignited and allowed to burn until a sample may be drawn into strings $\frac{1}{4}$ inch long between the fingers. The flame is extinguished and 1 lb. of black resin added and dissolved, and then $\frac{1}{4}$ lbs. dry brown soap. When all is combined, the varnish after a good stirring is set aside. Mix together indigo and Prussian blue of each $2\frac{1}{2}$ ozs.; mineral lampblack 4 lbs., vegetable lampblack $3\frac{1}{2}$ lbs., and stir them gradually into the varnish. The mixture is then thoroughly ground in a mill.

(29) In answer to W. C. F., who refers to our answer to query No. 17, December 15, 1877. The receipt refers to articles of brass or copper, which must be perfectly cleansed from grease before stuffing. You will find a number of the best recipes for silvering on p. 377, current volume.

(30) J. L. asks: Does the altitude of a place have any effect on the running of watches adjusted and regulated near the sea level? A. If the watches are properly adjusted and regulated, it should not.

Are standard aneroid barometers so reliable for general use as mercurial? A. Yes.

(31) T. P. C. writes: Can you inform me how the frosted engraving is produced on cutlery, swords, etc.? A. By etching the polished surface with acid. The articles are first heated to about 212°; then a thin coat of beeswax is melted over their surface, and when this cools the design is scratched through the wax by a needle; the acid is then poured on the design, and may be prevented from falling off by a little wall of wax built around the design. Muriatic acid answers very well for etching. The time required for the operation is best found by a little practice, as the fine lines of the design take more time to etch than is required for the coarse ones. When it is decided that the etching is complete, with clean cold water thoroughly wash away all traces of acid, and then with a little benzine remove the wax, and polish with clean, dry, chamois leather.

(32) T. N. asks: 1. Can beeswax work its way through the packing around the piston rod of the engine and into the cylinder, and more or less lubricate it? A. In ordinary cases it can. 2. Is it the friction on the piston rod that makes that groaning noise when starting up the engine and in motion, or is it the steam packing in the cylinder that does it? A. When it occurs it is generally due to the piston.

(33) A. H. D. asks: Would be glad to learn through you of a good practical textbook on calculations of hydraulics in general, but especially how to ascertain the number of horse powers used by a manufactory where the water is drawn from a canal, pond, or other reservoir. Also to calculate the hydraulic capacity of canals, rivers, streams, etc.? A. Box's work on "Hydraulics," which can be procured from a dealer in scientific books, contains a good summary of the most important rules. You will also find much useful information on the subject in Trautwein's "Engineer's Pocket Book." There are many other valuable works, a list of which can be found in the catalogues of the booksellers who advertise in our columns.

(34) C. O'B. asks for a cheap lacquer to bronze cast iron? A. Make a strong solution of copper chloride in hot water slightly acidified with muriatic acid, and apply this hot to the iron; then wash, dry with sawdust, and apply a lacquer made as follows: 1 gallon alcohol (spirits), 5 ozs. of shellac, 4 ozs. of gum sandarac, 1 oz. of gum elemi; heat gently in a tin vessel for some time, strain off, and add 6 ozs. of turmeric and 1 of gamboge.

(35) J. L. M. asks: What is the cause of that peculiar whiteness of the brick fronts of our buildings, more particularly those facing the north and east? A. We have not chemically analyzed the efflorescence referred to, but understand that it is attributed to the action of the elements upon the brick, whereby there is deposited a salt upon the surface thereof, mostly precipitated from the atmosphere, but at the same time extracting a portion of its ingredients from the mortar with which the brick is laid. On surfaces exposed to the sun's rays the deposit is prevented by evaporation.

(36) T. A. writes: I have a six horse engine, but I cannot make it keep up steam. Sometimes the fire goes out suddenly. I have to draw the dead coals and rekindle my fire. I attribute this to the fact of the exhaust pipe being carried into the smokestack. Am I right? A. Examine the inside of your boiler, and if you find it covered with scale, do not try to keep up steam until you remove it. Then if your boiler is exposed to the cold, cover it with a blanket padded with hair. Now if you do not have sufficient steam with a good fire, the cause is very likely to be that your boiler is too small for the engine.

(37) F. D. H. asks for a furniture polish? A. Take boiled linseed oil 1 pint, yellow wax 4 ozs. Melt together and color with alkanet root to give a reddish tinge. (2) A good and simple furniture polish consists of a little Castile soap scraped into a pint of warm water. Add three tablespoonfuls of sweet oil; heat and apply while hot.

(38) W. H. L. asks: Is it safe to wall in a large boiler in such a way that the fire can go entirely around it? We have put up a steam gristmill, and the parties who set the boiler, instead of shutting off the fire at the water line, arched the brickwork over the boiler, leaving a space of four or five inches for the heat and flames to pass over and around the boiler, giving as a reason that in this way it would consume less wood and would furnish dry steam for engine, and was in all respects better. A. In our opinion the parties show good judgment. In addition to the saving of fuel, it appears to us that the boiler is more likely to expand evenly, and be less subject to those severe strains caused by unequal expansion of the metal.

(39) F. J. C. asks for a flavor by which common tobacco can be given the Havana flavor? A. Extracts of vanilla and tonquin are used for this purpose, we believe.

(40) W. W. asks: What is the cheapest substance I can use for cementing together readily layers of straw board, the same to be waterproof or nearly so? A. You can use a solution of shellac in alcohol for this purpose, or a hot solution of glue in water, in which is dissolved 1 oz. of bichromate of potash and 2 ozs. of gelatin: this cement must be exposed to sunlight in order to render it partially insoluble.

(41) J. H. H. asks how he can become an engineer on an ocean steamer? A. You must search for a position as engineer's assistant, or even as stoker, on some vessel; prove yourself to be steady and reliable, and if you are strong and healthy, and have good mechanical ability, so as to be able to make repairs under difficulties, you will be able to pass the required legal examination for a third, then a second, and if you are fortunate, a first rate, or chief engineer.

(42) C. W. D. asks how to transfer pictures on paper to glass? A. Use good starch paste fastening the printed side next the glass; when dry use castor oil as directed on pp. 226 and 392, vol. 27, SCIENTIFIC AMERICAN.

(43) J. N. asks how to make the American commercial potash, and where is it made? A. Wood ash, preferably that of green wood and oak leaves, is digested in water and the solution obtained evaporated in iron pots and calcined at red heat to free from carbonaceous matters. The greater part of American potash by this method is produced in Canada. The Stassfurt salt mines, the residue from the manufacture of beet sugar, and the sluit of wood now supply the major portion as commercial potash.

(44) T. E. M. says: A friend of mine has a tree in front of his house, one limb of which points toward the west. In the winter, when very cold, the limb turns about 7 inches towards the south. With warm weather again it resumes its former position. What is the cause of it? A. The cause of this phenomenon may be found in the power of frost to expand water in congealing it. If you stand upon the roof of a house in a thickly populated city and observe the chimneys of the houses, you will find that almost without exception they lean towards the south and east. An explanation of this may be given in this way: The water absorbed by the mortar in the joints of the brickwork is frozen in the night, and during the day on the north side remains frozen; but on the south and east sides it is thawed out. The result is evident: one side is elevated and the other depressed, thus warping the chimney over towards the lower side. In the same way the frost acting upon the water in the pores of the wood may bring about a similar result in the tree you refer to.

(45) R. R. J. asks: What is the best solvent for India rubber when designed for marine glue, and is the crude or pure rubber best? A. Pure naphtha. Use ordinary caoutchouc or crude gum rubber.

An experienced painter tells me that bronze powders, if put on when the size is too green, will be drowned, and soon turn color. Is the same danger to be apprehended in the use of bronze powders on paper with printer's size? What grade of bronze powder is best for durable work? A. No; pure gold bronze should be employed.

(46) C. F. F. asks (1) how to keep cider sweet and (2) how to clean musty cider barrels? A. 1. Add to the cider about 1/1000 part of sodium sulphide dissolved in a little water. 2. Use a strong solution of soda containing a little alum, and then wash with plenty of cold water.

(47) O. C. L. asks for an easy, safe, and economical recipe for testing steam boilers? A. Fill the boiler with water, load the safety valve to the desired point, and heat the water gradually.

Also for destroying lice on cattle without injury to the brute? A. Perhaps some of our readers will be so kind as to send notes of their experience.

(48) C. R. asks how to make good hard soap? A. See No. (19), p. 123, vol. 37.

How can I prepare good hair oil? A. Castor oil 6 1/2 pints, alcohol 1 1/2 pints, oil of citronella 1/2 oz., lavender 1/4 oz. Shake well before each application.

(49) S. M. B. asks: Is mica a conductor of heat? A. Yes, to some extent.

Please tell me how to keep my feet warm without fire? I wear heavy boots and two pairs of socks. A. From your account the only alternative would seem to consist in increasing the thickness of the covering.

Is air heated by compression? A. Yes.

What is the best method of operating locomotive turntables? A. A well constructed turntable can easily be turned by any man with a lever of moderate length.

What is the best means of preventing a vessel from sinking, the means to be set in operation after the vessel strikes? A. A cellular construction of hull and watertight bulkheads.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

J. E.—It is not a meteorite, but marcasite imbedded in quartz. The brown coloration on the exterior is due to the conversion of the sulphite of iron into ferric oxide.—G. D. R.—It is sulphide of iron in a gangue of slate.—W. D. M.—It is a weathered sedimentary rock consisting principally of aluminous silicate, lime, and iron oxide. It contains nothing of value.—J. N.—It is limonite—a hydrous iron sesquioxide.—J. T.—The rock contains magnetic and ferric sulphides, and a little nickel and copper.—J. H. P.—It is ferric sulphide—not valuable.—B. L.—It is principally resin. No "diamond dust" could be found in it.—P. L.—It is crystallized carbonate of soda. The commercial article is worth 5 cents a pound—chemically pure, fifty cents a pound.—A. I. H.—It is aluminic in a clay matrix. The aluminate consists of alumina 29.8, sulphuric acid 23.2, water 47.0—parts in 100. It contains no pigment.—G. K. No. 1 is galenite—lead sulphide. No. 2 is calcopryite (copper iron sulphide) and galenite in quartzose gangue. May contain also zinc. No. 3 is dolomite containing sulphides of iron and copper and argentiferous galena.—No. 4 contains copper, iron, and lead sulphides—and some silver. No. 5 bears similar to the preceding. No.

6 contains much iron, but is rich in argentiferous galena. The vein is probably valuable.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure, the receipt of original papers and contributions upon the following subjects:

On Mechanism of the Heavens. By G. D.
On the Law of the Pressure of Saturated Steam with Relation to Temperature. By E. V.
On the Steam Yacht Estelle.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Inquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all; but we generally take pleasure in answering briefly by mail, if the writer's address is given.

WANTS AND BUSINESS INQUIRIES.

Almost any desired information, and that of a business nature especially, can be expeditiously obtained by advertising in the column of "Business and Personal," which is set apart for that purpose subject to the charge mentioned at its head.

We have received this week the following inquiries, particulars, etc., regarding which can probably be elicited from the writers by the insertion of a small advertisement in the column specified, by parties able to supply the wants:

Who makes electric machines for magic lanterns?
Who makes the machine for felling trees exhibited at the Centennial?
What kind of battery is used in mines to fire several blasts simultaneously?
Who sells toy rubber balloons?

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were
Granted in the Week Ending

November 27, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

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