

## Business and Personal.

The Charge for Insertion under this head is One Dollar a Line. If the Notices exceed four Lines One Dollar and a Half per Line will be charged.

Flouring Mill near St. Louis, Mo., for Sale. See back page.

The paper that meets the eye of manufacturers throughout the United States—Boston Bulletin. \$4 00 a year. Advertisements 17c. a line. Wanted—A Situation to superintend work, by a Machinist of considerable experience. Address "Machinist," carrier 98, Philadelphia, Pa.

For Sale—Retiring Partner's interest in a Sash, Door and Moulding Mill, located at one of the best points in the Northwest, and doing a large trade. A good opening to a paying business. Address "Mill Co." care Cook, Coburn & Co., Chicago, Ill.

Baby's Carriages—Send illustrated circulars of to a purchaser. Address Lock Box 304, Pittsburgh, Pa.

Griffith & Wedge, Zanesville, Ohio, are the only Builders of the Vertical Portable Engine, and their unequalled Saw Mill. H. Fairbrother says, July 21st, 1872, "I am making the Pine dust fly at the rate of Twenty thousand feet per day."

The best Portable Engine in the World is Griffith & Wedge's "Vertical." E. Boston says, August 5th: "Engine works first rate with any kind of green wood; the trouble is to keep the Steam down to 70 pounds, which is all we need. Hard Pin Oak, 25 in. cut, does not check it."

For Best Fish Net Machines—Lewis & Ward, 73 Commercial Street, Boston, Mass.

Valuable Invention for Sale, Pat'd. Box 116, Providence, R.I.

Woodworth Surface Planers, \$125. Planers and Matchers, \$350. S. C. Mills, 32 Courtlandt Street, New York.

Wood Lathes, all Sizes. Wm. Scott, Binghamton, N. Y.

See Mill Spring adv. to Millers and Millwrights, back page.

Turbine Water Wheels—Two twenty-four inch Reynolds Wheels—less than one year's wear and as good as new—for sale cheap. For further information, apply to J. G. Parker & Son, Poughkeepsie, N. Y.

Patent Steel Measuring Tapes, made and sold by W. H. Paine, Greenpoint, N. Y. Send for circular.

American Boiler Powder Co., Box 797, Pittsburgh, Pa., make the only safe, sure, and cheap remedy for 'Scaly Boilers.' Orders solicited.

A foreign patent of unusual merit for sale on liberal terms or on commission. Address G. T. W., Post Office, Baltimore, Md.

A Rare Chance—Pleasure Steamboat for \$275.00. Length, 16 feet; speed, 6 miles an hour. Address Geo. F. Shedd, Waltham, Mass.

Bogardus Mills—Two number 5 and five number 3, for sale cheap. Address B. G., 113 John St., New York.

Whitcher's Pat. Rotary Engine is the simplest, cheapest, and most economical. On exhibition at P. Fields & Son, North Point Foundry and Machine Works, Jersey City, N. J.

Platina Plating—Alb. Lovie, 729 N. 3d St., Philadelphia, Pa.

Wanted—A number of Rotary Engines. Dealers, please address J. D. Butler, Lancaster, Mass.

Windmills: Get the best. A. P. Brown & Co., 61 Park Place, N. Y.

Sweetser's Blacking and Brush Holder—illustrated in Sci. American, May 18, 1872. Best thing for Stove or Shoe Blacking. Needed in every household. Rights for sale. E. H. Sweetser, Box 317, Salem, Mass.

It is better to purchase one of the American Twist Drill Company's Celebrated Patent Emery Grinders than to wish you had.

Presses, Dies & all can tools. Ferracute Mch Wks, Bridgeton, N. J. Also 2-Spindle axial Drills, for Castors, Screw and Trunk Pulleys, &c.

New Pat. Perforated Metallic Graining Tools, do first class work, in less than half the usual time and makes every man a first class Grainer. Address J. J. Callow, Cleveland, Ohio.

Gear Wheels, for Models; also Springs, Screws, Brass Tube Sheet Brass, Steel, &c. Illustrated Price List free by mail. Goodnow & Wightman, 23 Cornhill, Boston, Mass.

Steam Boiler and Pipe Covering—Economy, Safety, and Durability. Saves from ten to twenty per cent. Chalmers Spence Company foot East 9th Street, New York—1202 N. 2d Street, St. Louis.

Brick and Mortar Elevator and Distributor—Patent for Sale. See description in Sci. American, July 20, 1872. T. Shanks, Lombard and Sharp Streets, Baltimore, Md.

The Berryman Manf. Co. make a specialty of the economical feeding and safety in working Steam Boilers. Address L. B. Davis & Co. Hartford, Conn.

The Berryman Heater and Regulator for Steam Boilers—No. one using Steam Boilers can afford to be without them. I. B. Davis & Co., Hartford, Conn.

Diamonds and Carbon turned and shaped for Philosophical and Mechanical purposes, also Glazier's Diamonds, manufactured and reset by J. Dickinson, 64 Nassau St., New York.

Wanted—Melter. Permanent situation, at good wages, to a good, experienced Iron Melter. Address C., Iron Founder, Cleveland, O.

Brown's Coalyard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable. W. D. Andrews & Bro., 414 Water St., N. Y.

For Machinists' Tools and Supplies of every description, address Kelly, Howell & Ludwig, 917 Market Street, Philadelphia, Pa.

Machinery Paint, all shades. Will dry with a fine gloss as soon as put on. \$1 to \$1.50 per gal. New York City Oil Company, Sole Agents, 116 Maiden Lane.

Williamson's Road Steamer and Steam Plow, with Rubber Tires. Address D. D. Williamson, 32 Broadway, N. Y., or Box 1809.

Belting as is Belting—Best Philadelphia Oak Tanned. C. W. Arny, 301 and 303 Cherry Street, Philadelphia, Pa.

Boynton's Lightning Saws. The genuine \$500 challenge. Will cut five times as fast as an ax. A 6 foot cross cut and buck saw, \$6 E. M. Boynton, 80 Beekman Street, New York, Sole Proprietor.

Better than the Best—Davis' Patent Recording Steam Gauge Simple and Cheap. New York Steam Gauge Co., 46 Cortlandt St., N. Y.

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

For hand fire engines, address Rumsey & Co., Seneca Falls, N. Y.

All kinds of Presses and Dies. Bliss & Williams, successors to Mays & Bliss, 118 to 122 Plymouth St., Brooklyn. Send for Catalogue.

To Ascertain where there will be a demand for new Machinery, mechanics, or manufacturers' supplies see Manufacturing News of United States in Boston Commercial Bulletin. Terms .00 year.

The best recipes on all subjects in the National Recipe Book. Post paid, \$2.00. Michigan Publishing Company, Battle Creek, Mich.

Mining, Wrecking, Pumping, Drainage, or Irrigating Machinery, for sale or rent. See advertisement, Andrew's Patent, inside page.

For Hydraulic Jacks and Presses, New or Second Hand, send for circular to E. Lyon, 470 Grand Street, New York.

Peck's Patent Drop Press. For circulars address the sole manufacturers, Milo, Peck & Co., New Haven, Ct.

For Marble Floor Tile, address G. Barney, Swanton, Vt.

Old Furniture Factory for Sale. A. B., care Jones Scale Works, Binghamton, N. Y.

Portable Baths. Address Portable Bath Co., Sag Harbor, N. Y.

For Steam Fire Engines, address R. J. Gould, Newark, N. J.

## Notes &amp; Queries.

[We present herewith a series of inquiries embracing a variety of topics of greater or less general interest. The questions are simple, it is true, but we prefer to elicit practical answers from our readers.]

1.—DIAMONDS.—Will some one of your readers tell me how to detect a diamond, and in what way to test its value?—C. W. P.

2.—COLORING INDIA RUBBER.—I would like to enquire if soft rubber can be colored throughout a bright and durable green, brown, yellow or other color?—C. L. P.

3.—PAPIER MACHE.—What is the process for making this substance, and what is put in the pulp to harden it?—W. R. F.

4.—SOLDERING LEAD.—Can any one tell me what is used by plumbers in joining lead?—J. C. H.

5.—CEMENT FOR IRON.—Is there any cement, in use in machine shops, for sticking iron together? If so, how is it made?—J. H. S.

6.—ROTTING STRAW.—What cheap chemical must I apply to straw in stable refuse to rot it quickly? I want something that will not affect brick or stone work.—C. DE P. F.

7.—VALUE OF PURE GOLD.—What is the value in coin of gold, 24 carats fine?—S. A. G.

8.—SMELTING LEAD, COPPER, GOLD AND SILVER.—H. S., of Ill., desires to know where good modern treatises on the subject can be obtained. There are several published, but the publishers keep them away from our advertising columns as much as possible.

9.—ELIMINATION OF MERCURY FROM TIN AMALGAM.—How can I obtain pure mercury from the coating on the backs of looking glasses?—J. H. M.

10.—CEMENT FOR MEERSCHAUM.—Can anyone tell me how to prepare a cement to mend a (colored) meerschaum pipe?—E. S. T.

11.—DRILLING HOLES IN GLASS.—Can any one give me practical directions for drilling holes in glass?—W. V. B.

12.—BOILING OIL.—Can steam be used, to replace a coal or coke fire, for boiling oil or other liquids requiring a heat of from 300° to 400° Fah?—V. L.

13.—INDIA RUBBER FOR STEAM TIGHT JOINTS.—Can india rubber be exposed to the heat of steam and iron without injury, being used as a washer or in place of an ordinary valve in immediate connection with a steam boiler?—V. L.

14.—DYING ANILINE BLACK.—How is the aniline black, the preparation of which is described on page 101, current volume of the SCIENTIFIC AMERICAN, used in dyeing?—E. T. H.

15.—WOODEN RAILWAYS.—E. O. N., of Tenn., repeats the questions asked by C. M. P., query 17, page 106. Will Mr. J. B. Hubert give the public some light on the plan he has adopted?

16.—THE VIENNA EXPOSITION.—T. C. P., of Mass., and others enquire who is our government agent for securing space and forwarding articles for exhibition at Vienna. If any appointment or arrangement has been made, it has hitherto been kept out of the public mind.

17.—CUTTING PLATE GLASS.—I have a plate of glass three tenths of an inch thick and two and a half feet wide, which I wish to cut without risk of breakage. A light diamond cuts it, but not surely. What means shall I use?—J. P. A.

18.—PRESERVING THE EYESIGHT.—Some years since much was said in relation to preserving the sight in old age by pressing the eyeballs. If anyone of your readers has received benefit from such treatment, he will do a vast amount of good by giving the particulars through your paper.—J. H. D.

19.—WATER VERMIN.—In your issue of August 10, page 84, I find a communication from W. Ward, Cleveland, O., on how to destroy wigglers. I am troubled with a similar pest. The cistern water is swarming with small reddish-colored bugs or lice; they crawl, and are very lively in the water, and are about one thirty-second of an inch in size, and smaller. The cistern was cleaned about three and a half months ago, and we have only noticed them for three weeks past. What can they be, and what is the best way to get rid of them?—A. H. R.

20.—NITRO-GLYCERIN.—Will some one please give me a formula for making nitro-glycerin?—P. G. S.

21.—BRONZING.—How can I bronze small castings in a simple and effectual manner?—L. H. W.

22.—PRESERVING POLISHED STEEL SURFACES.—We have seen it stated that carbonate of soda is found to be effective in preserving polished steel surfaces from oxidation. Can you inform us what solvent is used and how applied?—F. & N.

23.—VERMIN IN DRIED FRUITS.—How can I keep worms out of dried cherries and raspberries?—M. S.

24.—CEMENT TO RESIST WATER AND ALCOHOL.—Can any of your correspondents furnish me with a recipe for a cement to resist the action of both water and alcohol, which must possess sufficient elasticity so as not to crack and peel off?—F. S.

25.—WHALES AND FISHES.—I believe the notion prevail among scientific men, as well as among sailors, that the cetacea, an order of animals including whales, porpoises, etc., exhibiting a high degree of animal heat and exhaling an elastic fluid resembling air, though living only in water, are not fishes, but species of mammalia that breathe air like land animals. I have had many opportunities of watching the ways of these animals, and have caught a great many porpoises of different varieties; and these questions have occurred to me: 1. How am I to account for their sudden appearance and disappearance at long intervals, often in vast numbers, sometimes beneath the surface without touching it? 2. Can any one explain the fact that they never inspire? Their breath is invariably a more or less prolonged exhalation; while the inhalation of the seal and the turtle is easily distinguished from the short, feeble puff that precedes it. 3. How is it that they cannot live out of water? In fact, they die sooner than fishes generally

when they are taken out of water. And, like fishes, when deprived of the power of locomotion, they will soon die even in the water. Their anatomical structure, I believe, does not admit of that bellows-like motion so necessary to the process of respiration in air breathing animals. 4. What is meant by "warm blooded animals"? Have certain animals a constant fixed degree of animal heat, while all others are variable according to the temperature of the surrounding elements in which they live? Or are not all animals, including fishes, more or less warm blooded? 5. In catching fish, such as cod, bream, etc., in deep water, say thirty fathoms or more, they usually come to the surface in the condition that fishermen call being poked, the abdomen being distended to its utmost capacity, and a portion of the viscera protruding from the mouth, the whole fish inflated with some elastic fluid. Now what is this fluid? And how does it get there? May not the explanation of this phenomenon afford a clue to answer some of the preceding questions?—G. W. G.

## Answers to Correspondents.

SPECIAL NOTE.—This column is designed for the general interest and instruction of our readers, not for gratuitous replies to questions of a purely business or personal nature. We will publish such inquiries, however, when paid for as advertisements at \$1.00 a line, under the head of "Business and Personal."

ALL reference to back numbers must be by volume and page.

BURSTING OF SAWS.—G. A. H. is informed that no such accident as he mentions has ever occurred within our knowledge, nor do we think it is possible to burst a saw by running it at any velocity.

TOY BALLOONS.—A one line advertisement would obtain J. F. O. S. the information he seeks. See notice at the head of this column.

GREEN WALL PAPER.—J. S. G. is informed that the deleterious effects of green wall paper are most noticeable in rooms lined with flock paper, from which particles of wool, with, of course, the green coloring matter, are constantly getting detached. Green paint is not so hurtful, and the idea of varnishing it is a very good one.

DUPLICATING DRAWINGS.—W. R. F., of Mass., is informed that the sensitized paper mentioned in M. Renault's process is not photographic paper, but a chemically prepared material manufactured, we believe, in Paris.

APPARENT DIAMETER OF THE PLANETS.—\* \* \*, of Mich. sends us a communication with a sketch showing the apparent diameter of the planets, "as they would appear to the naked eye were the excess of light removed so as to render their disks visible." Our correspondent appears to be unaware that it is not possible to give a drawing which shall represent the apparent diameter of any body. A drawing of the moon may just as well be 12 feet in diameter as 12 inches; neither of these measurements can give any idea of the size of the moon as it appears to the eye. In a painting of a landscape, there is a proper diameter for the sun or moon, as the question of proportion to the trees and other objects represented then comes in. But without this opportunity for comparison, it is impossible to give any idea of the size of a heavenly body.

MILDEWED SAILS.—H., of N. J., should soap the mildew spots, and then rub in powdered chalk. The growth of the mildew fungus can be prevented by steeping the canvas in an aqueous solution of corrosive sublimate (bichloride of mercury).

THE WEIGHT OF THE ATMOSPHERE.—If an airtight chamber is able to hold 500 pounds weight above the water, will it be able to carry more in case the air be pumped out of the chamber?—S. R. Answer: Yes; the chamber will carry more if exhausted than if filled with air. Every 100 cubic inches of air, the barometer being at 30 inches and the thermometer at 59° Fah., weighs 31 grains avoirdupoise.

HAIR DYE.—To G. H. J., page 106.—Solution No. 1: Dilute solution of nitrate of silver. Solution No. 2: Solution of sulphide of ammonium or sulphide of potassium. Comb one solution through the beard carefully, and then use the other in the same way.—E. H. H., of Mass.

FRICTION MATCH COMPOSITION.—C. B., page 106.—The following I have frequently made, and know to be good. I presume you know the *modus operandi* in making or mixing. Phosphorus, 34 parts; nitrate of potash, 50 parts; chlorate of potash, 26 parts. red lead, 43 parts; best glue, 42 parts.—E. H. H., of Mass.

TEMPERATURE OF ICE HOUSE.—J. C. McC., page 106.—The radical fault with your ice house appears to have been the wet sawdust; it should have been dry sawdust, a very fair nonconductor of heat, whereas the wet would infallibly cause the unfortunate result. There should be no ventilation whatever, especially at the top. Any water from the melting ice should have a chance to get away, so as not to remain in contact with the lumps.—E. H. H., of Mass.

SPONTANEOUS COMBUSTION.—To W. F. C. S., page 106.—The cases you relate were most undoubtedly of spontaneous combustion, and the college professor must have been lamentably ignorant of common things to have made the statement he appears to have done.—E. H. H., of Mass.

PURE VINEGAR.—To J. E. H., page 106.—Most certainly vinegar can be, and is, manufactured perfectly free from the little eels, etc., you speak of. If a vinegar is properly and carefully made—no matter from what material—it will be perfectly clear, bright, and free from animalcules. If it be thick and muddy, it is owing to careless treatment, and is almost sure, sooner or later, to breed the eels. A perfectly sound good vinegar can be made in less than forty-eight hours, and better than that generally made to take from seven to nine days in production.—E. H. H., of Mass.

EXTINCTION OF CAB LAMP ON A LOCOMOTIVE.—To W. F. C. S., page 106.—Probably it is caused by the peculiar vibration of the air resulting from a particular note produced by your whistle. If you modify the note, so as to be either considerably above or below its present pitch, very likely the lamp will not be put out. If you try the experiment, I should like to know the result. I suppose the note or sound may be modified by increasing or diminishing the aperture through which the steam escapes, or else by attaching a different cup on top, or perhaps placing something on the present one.—E. H. H., of Mass.

SETTING BOILERS.—To J. D. H., query 16, page 106.—The cause of your carbon explosions is that you do not admit air enough to burn it as fast as it accumulates. You should leave your ash pit door more open, and pack your fuel less closely, or admit air through a damper in the furnace door; if there be no damper in the door, drill a dozen half inch holes or leave it a little open. There is no harm in admitting more air under the grate unless you wish to burn your fuel in the ash pit. Keep your chimney damper wide open while running.—A. L., of Mass.

RED ANTS.—Query 23, page 90.—If J. C. W. will sprinkle finely powdered borax about freely in his cupboard, I think he will not be troubled in the future with red ants.—J. C. E., of O.

TEETH IN WHEELS FOR CHAIN BELT.—M., query 6, page 90. Is correct in saying that "different wheels require different spacing for the same chain," if he spaces from one tooth to the next at one stride of the dividers, which is an incorrect method. The simplest way is to first ascertain the precise length of a link between the centers or pivots, and then set your dividers and space around on the pitch line. This being done, rub out every other point; the remaining points will be the correct centers for the teeth. This rule will be found correct, no matter how large or small the wheels may be.—G. B. D., of Ill.