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.

Wanted—Competent draughtsmen, experienced in blast furnace and steel works construction. State experience. Address G. S. L., P. O. box 773, New York.

All Books and App. cheap. School Electricity, N. Y.

Economic gas engine cheap. W. E. Lewis, Corry, Pa.

Hasp lock patent for sale. C. P. Pond, Camden, N. Y.

Important legal decisions and Patent Office rules condensed, now ready at Washington for free distribution by W. X. Stevens, solicitor of patents.

For Sale—Complete fixtures of a well equipped job machine shop, including blacksmiths', pattern makers', and pipe fitters' outfits; al o 500 miscellaneous patterns. All in place and in working order. Price, $4,000. Terms, $1,000 cash; balance, easy payments. Inventory furnished on application to J. F. Hammond, 117 South 16th St., Omaha, Neb.

Worth Remembering.

Every inspiration of the lungs, every pulse throb of the heart, every sweep of the arm, even our very thoughts as they speed through the brain, all create waste matter that must be constantly removed if there is to be that beautiful harmony of functional effort which constitutes health. Nature's remedy is the sure and eminently wise one of expelling, by proper purgation, the humors which cause disease, and Dr. Pierce's "Pleasant Purgative Pellets" are nature's great ally in the cure of digestive disturbances, and an unfailing remedy for constipation and its pernicious effects.

Small Metal Goods of every description made to order. Die work, etc. E. C. Ivins, 528 N. 10th St., Phila., Pa.

Machinist Foreman wanted who can handle fifty men to advantage and increase their production by latest improved ways of doing work. Address P., care of Wilkinson & Co., 352 Atlantic Ave., Boston, Mass.

Friction Clutches from $2.25 on. J. C. Blevney, Newark, N. J.

Haswell's Engineer's Pocket-Book. By Charles H. Haswell, Civil, Marine, and Mechanical Engineer. Giving Tables, Rules, and Formulas pertaining to Mechanics, Mathematics, and Physics, Architecture, Masonry, Steam Vessels, Mills, Limes, Mortars, Cements, etc. 900 pages, leather, pocket-book form, $4.00. For sale by Munn & Co., 361 Broadway, New York.

Woodworking Machinery of all kinds. The Bentel & Margedant Co., 116 Fourth St., Hamilton, O.

A Catechism on the Locomotive. By M. N. Forney. With 19 plates, 227 engravings, and 600 pages. $2.50. Sent on receipt of the price by Munn & Co., 361 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Pumps for liquids, air, and gases. New catalogue now ready.

The Knowles Steam Pump Works, 44 Washington St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J.

Concrete Apparatus, etc. Ernest Ransome, S. F., Cal.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. $100 "*Little Wonder.*" A perfect Electro Plating Machine. Sole manufacturers of the new Dip Lacquer Kristaline. Complete outfit for plating, etc. Hanson, Van Winkle & Co., Newark, N. J., and 92 and 94 Liberty St., New York.

Iron Planer, Lathe, Drill, and other machine tools of modern design. New Haven Mfg. Co., New Haven, Conn.

Send for catalogue of Scientific Books for sale by Munn & Co., 361 Broadway, N. Y. Free on application.

Supplement Catalogue.—Persons in pursuit of information of any special engineering, mechanical, or scientific subject, can have catalogue of contents of the SCIENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLEMENT contains lengthy articles embracing the whole range of engineering, mechanics, and physical science. Address Munn & Co., Publishers, New York.

Curtis Pressure Regulator and Steam Trap. See p. 142.

Wrinkles and Recipes. Compiled from the SCIENTIFIC AMERICAN. A collection of practical suggestions, processes, and directions, for the Mechanic, Engineer, Farmer, and Housekeeper. With a Color Tempering Scale, and numerous wood engravings. Revised by Prof. Thurston and Vander Weyde, and Engineers Buel and Rose. 12mo, cloth, $2.00. For sale by Munn & Co., 361 Broadway, New York.

Best Automatic Planer Knife Grinders. Pat. Face Plate Chuck Jaws. Am. Twist Drill Co., Meredith, N. H.

Iron, Steel, and Copper Drop Forgings of every description. Billings & Spencer Co., Hartford, Conn.

Rubber Belting, all sizes, 77½ per cent regular list. All kinds of Rubber Goods at low prices. John W. Buckley, 156 South Street, New York.

We are sole manufacturers of the Fibrous Asbestos Removable Pipe and Boiler Coverings. We make pure asbestos goods of all kinds. The Chalmers-Spence Co. 419 East 8th Street, New York.

New Portable & Stationary Centering Chucks for rapid centering. Price list free. Cushman Chuck Co., Hartford, Conn.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Send for free Catalogue of Books of Amusements, Speakers, Dialogues, Card Games, Fortune Tellers, Dream Books, Debates, Letter Writers, Etiquette, etc. Dick & Fitzgerald, 18 Ann St., New York.

60,000 *Emerson's* 1886 ☞ Book of superior saws, with Supplement, sent free to all Sawyers and Lumbermen. Address Emerson, Smith & Co., Limited, Beaver Falls, Pa., U. S. A.

Safety Elevators, steam and belt power; quick and smooth. D. Frisbie & Co., 112 Liberty St., New York.

Astronomical Telescopes, from 6" to largest size. Observatory Domes, all sizes. Warner & Swasey, Cleveland, O.

Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 136 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., New York.

"How to Keep Boilers Clean." Send your address for free 88 page book. Jas. C. Hotchkiss, 93 John St., N. Y.

Planing and Matching Machines. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

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 Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(1) S. & C. ask how to keep the frost, moisture, etc., off plate glass windows. A. Only by keeping the inside air dry, or by inner sash made tight, so that the air in window inclosure will be cold, and ventilated from the outside. A partial remedy is to have ventilating openings in the top of the window casing.

(2) M. M. A. asks if there is any hand power for propelling small boats that gives more speed than a pair of oars. A. We know of none that gives as good results as oars.

(3) W. S. C. asks why it is that some steam gauges are made larger than others. A. Only as a matter of taste. The small gauges are quite as reliable as the large ones, all being tested for the same pressures as indicated by their faces.

(4) F. B. S.—The so-called malleable iron is not fit to make castings of; it is as difficult to melt as wrought iron. You may melt steel at a very high heat. We recommend you to confine your work to the melting of soft gray iron. Good cast iron scrap mixed with charcoal or Scotch pig will make good, sound castings. See Greenwood on Steel and Iron, which we can mail you for $2.00.

(5) J. G. M. asks: 1. What pressure is produced in compressing 1 cubic foot of air into ½ cubic foot of air and ¼ cubic foot of air? A. 1 cubic foot to ½ cubic foot, 15 pounds pressure; 1 cubic foot to ¼ cubic foot, 30 pounds pressure. 2. Can this be done with a 20 inch Buffalo blower driven by hand? If not, how can it be done? A. It cannot. It requires a piston pump made for compressing air, which is on sale by the steam pump trade. 3. What pressure will ordinary ½ to ¾ inch gas pipe stand? A. ½ or ¾ inch gas pipe, if properly welded, will stand 1,000 pounds per square inch and upward.

(6) O. C. M. writes: I have a small flat steel article which needs protection from rust. Tinning alone will not answer the purpose. Galvanizing alone will do well, but is not quite bright enough to appear well. How would it answer to first galvanize and then tin? A. You can tin over the galvanizing without removing all the zinc by immersion in the tin bath, a thin coating of zinc and iron alloy remaining on the work; but the tin bath will soon deteriorate by absorption of the free zinc. If you can afford to renew the tin bath often, you will succeed.

(7) E. N. C. writes: A number of mechanics of this place respectfully ask: Does the entire boiler pressure come on the valve (of the ordinary slide valve engine) without reaction? A. The entire steam pressure is upon the valve. This is only partially balanced by the varying pressure on the cutting off; the cushioning at the end of the stroke (if any), and the slight exhaust back pressure.

(8) W. & S. ask how to distinguish iron from steel. A. By breaking and comparing crystallized surface, or by immersing in nitric acid 1 part, water 3 parts, for a few minutes. Steel will show a homogeneous, granular surface. Iron will show a streaky or fibrous surface, or try whether the article is susceptible of tempering.

(9) D. P. B. asks how to prepare printer's ink so as to print on muslin with wooden type. A. Thin with boiled linseed oil, if it be absolutely necessary, but by doing the work slowly, and with the skill a good printer would exercise, you will get a better color if this can be avoided.

(10) W. F. E. asks how the acid for etching glass is made, that leaves the glass white and semi-opaque. A. See the article on "Fluoric Acid, its Preparation and Use in Glass Engraving," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 380.

(11) G. M. asks a receipt for making yeast to manufacture vinegar by fermentation. A. Boil 9 ounces of hops with 3 pails of water, put 9 pounds of good flour in a tub, and strain enough of the hop water over it to make it into a stiff paste, beat it up thoroughly, strain in the rest of the hop water into the paste, let it stand until lukewarm, then add 4½ quarts of stock yeast. It will rise 1 to 3 inches, but do not disturb it until it drops.

(12) G. Z. asks (1) whether there is any method of restoring paper which has been acted upon by oxalic acid, which was used to remove carmine ink stain, and turned the paper yellow. A. If the fiber of the paper has been destroyed by the acid, which is most likely, you cannot restore it. A little gum water may restore the finish of the paper. 2. What library contains the most books on chemistry? A. The library of Columbia College, corner 49th Street and Madison Avenue.

(13) C. A. C. writes: I am making a paper canoe, and I would like to have the receipt for making a waterproof shellac or varnish that will stick the edges of the paper together. A. One quarter of an ounce crude gutta percha dissolved in carbon disulphide to the consistency of mucilage.

(14) C. L. S. wants a receipt for liquid stove blacking. A. Pulverized blacklead 1 pound, turpentine 1 gill, water 1 gill, sugar 1 ounce.

(15) E. H. C. asks the market value in New York or Brooklyn of the metal molybdenum or the mineral molybdenite. A. Metallic molybdenum has a value of about $50 a pound, but as there is no demand for it, it is unsalable except in small quantities for museums or collectors. The mineral molybdenite is salable only to dealers in minerals.

(16) I. S. F. wishes to know the contents of a wall measuring 3 feet by 12 feet by 30 feet. A. The wall contains 1,080 cubic feet. If it is a rubble stone wall, it will be measured by the perch of 25 cubic feet, and will contain 43¼ perches. If it is masonry, it will be measured by the foot cube; and if brickwork, by the number of bricks it contains, viz., 24,300.

(17) E. E. S. asks: 1. Will you give some kind of wash or stain for brickwork that will protect the brick and not wash off without oil, and be permanent? A. To make a good wash for external purposes, rinse 1½ bushels of white lime with 3 pecks of hydraulic cement (say Rosendale or Portland) and add sufficient water and color as may be desired. Another is formed of ½ bushel of slaked quicklime mixed with ½ pound of sulphate of zinc, 1 pound of common salt and 1 gallon of sweet milk. 2. What is understood by a sounder (telegraphic) of 20 ohms? Does it mean 10 ohms on each spool and 20 on the pair? Or does it mean 20 ohms on each spool? A. A sounder of 20 ohms means one having a total resistance of that current on both bobbins. 3. Will a core made of ¼ inch iron wire do for magnet core on 20 ohm sounder? A. It would.

(18) A. B. B. says: I have a pound and a half of No. 18 cotton covered wire. Will you please inform me how I can make a continuous spark coil for gas lighting? A. You need much more wire. About five or six pounds of No. 24 magnet wire, wound on a bundle of short iron wires, eight inches long and an inch in diameter, will give good results.

(19) C. J. M. asks: 1. Can it be possible that permanent magnets could be so constructed so as to generate an electric current (without friction or motion), the same as cell or fluid battery? A. Unless our present theories are all wrong, it is impossible. We believe nothing can be done by experimentation in this direction. 2. Where can I obtain electric lamps such as described in SCIENTIFIC AMERICAN of October 16, 1886? A. Trouve, of Paris, makes such a lamp. Address Stout-Meadowcroft Company, 82 Fulton Street, New York, for general information as to electric lamps.

(20) G. W. C. asks how to preserve whole peaches so as to retain their natural size and color? A. Peaches are thus prepared for show purposes by submitting them to a bath of sulphur gas and a liberal use of antiseptics.

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October 26, 1886,

AND EACH BEARING THAT DATE.

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