

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. The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue.

Wanted—Two Machinists that are good on general jobbing. Address H. Gillett & Son, Lake City, Wabasha Co., Minn.
Poirrier's Anilines and Copying Composition. Copy-gram Co., 104 Duane St., N. Y. See adv. p. 220, last No.
For manufacturing sites, coke and gas coal lands, their qualities and prices, address Mellon Brothers, Pittsburg, Pa.

Mackenzie Cupola and Blower. The very best apparatus for melting iron; and with water bosh for smelting lead, silver, or copper ores. Send for pamphlet. Smith & Sayre Manuf. Co., 21 Courtland St., New York.

Backus Water Motor, 30 in. double, nearly new; for sale low. Gould & Eberhardt, Newark, N. J.
Penfield (Pulley) Block Works. See illus. adv. p. 220.

LAKE VIEW HOUSE, LIVONIA, N. Y., Feb. 9, 1880: E. W. Johns Mfg. Co., 37 Maiden Lane, New York. DEAR SIRS: We have used your Paint on our buildings, and find one coat goes as far and covers as well as two coats of lead and oil.

Your truly, E. R. BOLLES.
\$60 saved in one day on one engine by an intelligent use of the Indicator. See Lyman's Treatise on "The Use of the Steam Engine Indicator." Price \$1. Address Edward Lyman, C. E., New Haven, Conn.

Will pay \$25 for best article on Acoustic Telephones and Lines. Must be plain to ordinary readers, illustrated with plans, etc. Rejected MSS. returned. Good suggestions credited. Address "Teachers' Guide," Mallet Creek, Ohio.
For Standard Turbine, see last or next number.
Foundry and Machine Shops for sale. Established in 1846. Write for description to E. J. Hoem, Addison, Steuben Co., N. Y.

Recipe for sale for making a superior deep black Shoe Polish, without acids, etc. Address C. F. Doring, Troy, N. Y.
4 to 40 H. P. Steam Engines. See adv. p. 220.

The 1880 Pennsylvania Lawn Mower.—Light draught and easily adjusted. Machines warranted. See illus. adv. last week. Lloyd, Supplee & Walton, Philadelphia, Pa.
Wanted—Glass and Tin Fruit Cans; large quantities. Send price lists to E., Buff Bay, Jamaica, West Indies.

All kinds Machine Drawings. Inventors' work a specialty. Hours, 9 to 6. Wm. D. Skidmore, 733 Broadway, New York.
Brass Castings; bottom prices. H. B. Morris, Ithaca, N. Y.
For Alcott's Improved Turbine, see adv. p. 204.
Boiler Feed Pump, with tight and loose pulleys; sure to work. Price \$32. York & Smith, Cleveland, O.

For Sale.—An Agricultural Establishment, consisting of two story wood & machine shop, foundry, office, & storeroom; water power. Address Box "I," Weldon, N. C.
Boat Engines, for sidewheel boats drawing 6 to 12 in; direct acting; link motion—cheap. Box 559, Owego, N. Y.

For Sale.—Four Boilers, 160 horsepower each, return drop flue; A 1 condition; \$1,500 each. 1 Berryman Heater, 42 x 96; A 1 condition; \$100. D. L. Einstein, 16 White St., New York.
Corrugated Traction Tire for Portable Engines, etc. Sole manufacturers, H. Lloyd, Son & Co., Pittsburg, Pa.

For Patent Shapers and Planers, see illus. adv. p. 188.
Spokes and Rims, white oak and hickory, best quality, to any pattern, and Hammer Handles of best hickory. John Fitz, Martinsburg, West Va.
For the best Stave, Barrel, Keg, and Hoghead Machinery, address H. A. Crossley, Cleveland, Ohio.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, borders, etc., sent on receipt of \$2. Palm & Fechteler, 408 Broadway, New York city.
Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa.
National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Brinker St., Philadelphia, Pa.
Stave, Barrel, Keg, and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.
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.

Sheet Metal Presses, Ferracite Co., Bridgeport, N. J.
Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, importers Vienna lime, crocus, etc. Condit, Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Wright's Patent Steam Engine, with automatic cut-off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.
Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y. Bradley's cushioned helve hammers. See illus. ad. p. 205.

Forsyth & Co., Manchester, N. H., & 213 Centre St., N. Y. Bolt Forging Machines, Power Hammers, Comb' Hand Fire Eng. & Hose Carriages, New & 2d Hand Machinery. Send stamp for illus. cat. State just what you want.
Electrical Indicators for giving signal notice of extremes of pressure or temperature. Costs only \$20. Attached to any instrument. T. Shaw, 915 Ridge Ave. Phila.

Instruction in Steam and Mechanical Engineering. A thorough practical education, and a desirable situation as soon as competent, can be obtained at the National Institute of Steam Engineering, Bridgeport, Conn. For particulars, send for pamphlet.
Hydraulic Jacks, Presses and Pumps. Polishing and Buffing Machinery. Patent Punches, Shears, etc. E. Lyon & Co., 470 Grand St., New York.
Portable Forges, \$12. Roberts, 107 Liberty St., N. Y.

Telephones repaired, parts of same for sale. Send stamp for circulars. P. O. Box 305, Jersey City, N. J.
For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 188.
Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Large knife work a specialty. Also manufacturers of Solomon's Parallel Vise. Taylor, Stiles & Co., Riegelsville, N. J.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 188.
For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Company, Buffalo, N. Y.
Wanted—A Second-hand improved Country Campbell Press, 31 x 46, for \$500 cash. A. G. Blair, Waynesboro, Franklin Co., Pa.

Machine Diamonds, J. Dickinson, 64 Nassau St., N. Y.
Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.
For Wood-Working Machinery, see illus. adv. p. 221.

Wanted—The address of 40,000 Sawyers and Lumbermen for a copy of Emerson's Hand Book of Saws. New edition 1880. Over 100 illustrations and pages of valuable information. Emerson, Smith & Co., Beaver Falls, Pa.
Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 189.
Eclipse Portable Engine. See illustrated adv., p. 222.
Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus' adv. p. 62.
Eagle Anvils, 9 cents per pound. Fully warranted.
Elevators, Freight and Passenger, Shafting, Pulleys, and Hangers. L. S. Graves & Son, Rochester, N. Y.

For Separators, Farm & Vertical Engines, see adv. p. 188.
Best Turkey Emery in kegs, half kegs, and cans; liberal rates by the ton. Greene, Tweed & Co., N. Y.
Blake's Belt Studs. The best and cheapest fastening for rubber and leather belts. Greene, Tweed & Co., N. Y.
The Horton Lath Chucks; prices reduced 25 per cent. Address The E. Horton & Son Co., Windsor Locks, Conn. \$275 Horizontal Engine, 20 H. P. See page 221.
Emery Wheels of all kinds, and Machines at reduced prices. Lehigh Valley Emery Wheel Co., Weissport, Pa.

For Sale.—Two Windmill Patents, and set of patterns for same. None better. F. C. Maxwell, Columbus, O.
Judson's Sectional Assay Furnaces. No. 1, \$45; No. 2, \$70. W. E. Judson, Cleveland, O.
Pat. Steam Hoisting Mach'y. See illus. adv., p. 221.
Nellis' Cast Tool Steel, Castings from which our speciality Plow Shares. Also all kinds agricultural steels and ornamental fencings. Nellis, Shriver & Co., Pittsburg, Pa.

Wheels and Pinions, heavy and light, remarkably strong and durable. Especially suited for sugar mills and similar work. Circulars on application. Pittsburg Steel Casting Company, Pittsburg, Pa.
Self-feeding Upright Hand Drilling Machines of superior construction. Pratt & Whitney Co., Hartford, Ct.
Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

For best low price Planer and Mather, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Hermance, Williamsport, Pa.
The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher, Schumm & Co., Philadelphia, Pa. Send for circular.
For Middlings, Mill and Mill Furnishing, see adv. p. 222.
Elevators.—Stokes & Parrish, Phila., Pa. See p. 221.

NEW BOOKS AND PUBLICATIONS.
DIRECTOR OF THE FLOUR MILL OWNERS AND MILLWRIGHTS OF THE UNITED STATES AND CANADA, 1880. Milwaukee, Wis.: E. Harrison Cawker, editor U. S. Miller.
Business men having or desiring trade with millers and millwrights will appreciate the value of a list of names with post office addresses covering so fully the great flouring industry. The book shows a marked improvement on the former directory in size and fullness of information.
ANUARIO UNIVERSAL. Almanaque Estadístico, Administrativo y Comercial para 1880. Mexico: Filomento Mata, editor. 32mo, cloth, pp. 405.
Well filled with information in relation to the governmental, social, and commercial affairs of the State of Mexico, with a plan of the capital etc.

SEWERS AND DRAINS FOR POPULOUS DISTRICTS; WITH RULES AND FORMULÆ FOR THE DETERMINATION OF THEIR DIMENSIONS UNDER ALL CIRCUMSTANCES. By Julius W. Adams. Illustrated. New York: D. Van Nostrand, 8vo. cloth, pp. 228.
In 1857 Mr. Adams was charged with the planning of the sewage system of the city of Brooklyn, covering an area of twenty square miles; and as chief engineer of the Board of City Works he has taken a controlling part in the development of the great work. The constant inquiry for detailed information in regard to the system pursued has led to the preparation of this volume, in which he lays down the principles and describes the methods which he believes to be best adapted to the economical and successful sewerage of towns and cities. The work is eminently practical and to the point.
SAWS: THE HISTORY, DEVELOPMENT, ACTION CLASSIFICATION, AND COMPARISON OF SAWS OF ALL KINDS. By Robert Grimshaw, Ph. D. Philadelphia: Claxton, Remsen & Haffelfinger. Quarto, cloth, pp. 160. Price \$2.50.
Reserving sawing machines for another treatise, Mr. Grimshaw here describes with great fullness and with a profusion of illustrations, the saw blade, in all its varieties. The manufacture of saws and the various processes of setting, swaging, gumming, and filing of saws, and related matters are treated in appendices, which contain also many useful tables of gauges, log measurements, etc., and an alphabetical list of all United States saw patents from 1790 to 1880. The book is handsomely made and well indexed.

FREE SHIPS. By John Codman. New York: G. P. Putnam's Sons. Pp. 54, paper. Price 25 cents.
Second edition of No. VI. of Putnam's Economic Monographs. Adds to the original arguments for the restoration of the American carrying trade by the free importation of ships, a review of the plans of Senator Blaine and Secretary Sherman.

A MANUAL OF TOBACCO CULTURE. By R. B. Davis. Hickory, North Carolina: Hall Brothers. Paper, pp. 30. Gratis.
Sets forth the advantages of the Piedmont section of North Carolina for the production of yellow tobacco, and treats the cultivation and curing of the tobacco plant with special reference to the condition and requirements of Piedmont.

SAWYER'S HAND BOOK. Emerson Smith & Co., extensive saw manufacturers at Beaver Falls, Pa., have issued an attractive hand book, in which they not only tell the public where to purchase saws, but the book also contains many useful hints on saw mills and machinery, how to straighten saws, their proper speed, prevention of heating, etc.

Emerson Smith & Co., extensive saw manufacturers at Beaver Falls, Pa., have issued an attractive hand book, in which they not only tell the public where to purchase saws, but the book also contains many useful hints on saw mills and machinery, how to straighten saws, their proper speed, prevention of heating, etc.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.
Names and addresses of correspondents will not be given to inquirers.
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.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.
Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) W. E. asks: Is the apex of the zodiacal light in the same direction from the sun as the aphelion point of the earth's orbit? A. The zodiacal light extends out on each side of the sun nearly in the plane of the ecliptic.

(2) W. B. asks: 1. Is there an odorless coal oil in the market? A. No. 2. What chemical will dissolve old rubber boots? A. There is no practical solvent. See pp. 48 and 105, Vol. 39, SCIENTIFIC AMERICAN.

(3) F. A. P. asks: Is there anything that printers use to put in their ink, vermilion, lake, or black, for instance, which will give a lasting gloss? If so, what is it and how is it used? A. Use a fine, well milled ink. We know of nothing that will impart greater gloss to ink used in type work.

(4) L. F. T. asks how to make an imitation of ground glass by the use of acids or some inexpensive material other than machinery. A. The sand blast or wheel is the cheapest method of frosting glass. The only acid that can practically be applied is hydrofluoric, produced by the action of warm sulphuric acid on powdered fluor spar. Hydrofluoric acid in gutta-percha bottles is quoted at \$2.50 a pound in New York.

(5) A. J. P. writes: I wish for some process of duplicating writing by which I may secure more copies—say 500—and more distinct than by the new gelatine pad process; also an apparatus not so expensive as the electric pen or the papyrograph, which cost, I believe, \$35 or \$40. I wish something as cheap as the first, and effective as the last. I see no reason why the latter might not be afforded for \$5.00. A. Try the following: Use the gelatine pad made with a large proportion of glue. Soak writing paper in alum water to saturation and dry carefully. Write with any ink on the prepared paper and use as in the gelatine pad process; the parts of the gelatine surface not protected by the ink will be affected by the alum so as to leave a stencil which can be used by inking with a roller as in the electric pen process.

(6) S. A. asks (1) whether it is advisable to build a cistern under the basement of a dwelling house. The architect of the building insists that it should be under the building; other parties contend that it will prove injurious to the health of the inmates, on account of condensed air in cistern. We would like your opinion on the subject. A. We do not advise placing the cistern under the house as proposed. 2. What are the proportions of the best concrete? A. 5 parts gravel or sharp sand, 1 part ground quicklime (fresh). Mix with a shovel, and slake with water into a thick mortar.

(7) R. G. asks: 1. Does the velocity of a projectile from a gun outside the gun ever exceed the highest velocity inside the gun? A. No. 2. Or another phase of the same principle: does a ball thrown from the hand ever travel more rapidly than the hand in throwing it? A. Possibly yes, as the muscles of the fingers give an impulse to the ball.

(8) E. L. K. asks if there is a mixture of any kind that will remove old paint from wagon bodies? A. There is no mixture that will remove the paint successfully and leave the wood in good condition to repaint. It is a better plan to soften the paint by heat from a hot iron, or alcohol or gas flame held near it, and then scrape it off with a suitable knife or chisel.

(9) W. R. H. asks: 1. Should steel for permanent magnets be hardened? If so, what temper is best? A. The steel should be hardened and drawn to a

deep yellow. 2. Where can I find information on minor details of construction of both permanent and electromagnets? A. In SUPPLEMENTS 142, Telephones; and 182, Electromagnets.

(10) F. E. G. asks (1) for dimensions for a boiler of an engine 1 inch by 2 inches. A. About six square feet heating surface. 2. What should be the thickness of plates of copper and iron for such a boiler? A. Thickness depends upon diameter of the boiler. 3. What would be pressure to the square inch to raise a valve 1/2 inch in diameter and center of valve 1 inch from fulcrum, and lever 6 inches long, and weight 3 lb. on end? A. 106 lb. per square inch nearly.

(11) F. W. S. asks if there is any method of deadening the noise of presses by any substance that could be placed under the feet of the machines. I run two presses, an 8 Gordon and an Acme cylinder, in the second story of a brick building, and the noise is annoying to tenants on the floor underneath. A. We think if the frames of the presses were set on pieces of thick india rubber, and the floor deadened in any of the usual modes, the presses would cease to be a nuisance.

(12) R. K. asks: When does a stationary engine run backward or forward, or, in other words, which way does an engine run when the balance wheel runs from the cylinder or power? A. If the top of the balance wheel runs from the cylinder, the engine runs forward.

(13) W. R. W. asks: 1. When and where was the ship known as the Three Brothers (formerly the Vanderbilt) built, and who was her first captain? A. 1856, at Greenpoint, L. I., Captain Le Fevre. 2. What is her tonnage, and is she the largest sailing vessel now existing? A. 3,360 tons; the largest American sailing ship, but we believe there is a larger English ship.

(14) W. T. asks: 1. Can I separate the albumen from ordinarily albumenized paper after a photo has been printed on it, so as to leave a temporary film, to be fixed to glass? If so, how? A. We know of no satisfactory way of doing this. Try the following: Slightly coat the face with a thin negative varnish, press the print down smoothly on the glass, and when the varnish has hardened, thoroughly moisten the paper with hot water, and carefully detach the paper. A little ammonia may be used with the water. It is better to print the photograph directly on the gelatin coated glass. 2. What colors could I use (water or oil) for lantern slides? What pigment and how mixed? A. The available pigments are Prussian blue, gamboge, carmine, veridigris, madder brown, indigo, crimson lake, raw and burnt sienna, caph brown, and van dyke brown. The aniline or coal tar dyes are also used, but, unfortunately, they are apt to fade. No particular method of mixing the colors is requisite; ordinary oil or water colors will do, but they must be ground extremely fine. The pencils must be small, and their points unexceptionable. Camel's hair is preferable. The best vehicle to use for thinning out the colors is ordinary megilp, and the smallest possible quantity only of this should be used; if excess is used, the colors will run. The best medium for laying on the first wash of color is a hot solution of isinglass. If the lime light is to be used the colors should approximate as nearly as possible to nature. Lamp and ordinary gas light is deficient in blue, the yellow preponderating; where these are used the tints must be arranged accordingly; greens must be bluer than natural, yellows inclined to orange, and all shades of violet eschewed. Consult Groom's "Transparent Printing on Glass." 3. How are the sheets of paper prepared for ordinary transfers, and what is the dull film on the face side? A. The pictures are printed on paper heavily sized with gum, the face being also gummed.

(15) J. A. E. asks: How can the rattling or bubbling of a kitchen or hot water boiler be prevented or remedied? I have one that is piped with 3/4 inch pipe, with 9 feet of pipe in the stove, with three return bends. A. When a coil is used in a stove instead of a water-back the diameter of the pipe should not exceed a certain proportion to its length, with the fewest possible turns, that the water as it warms can pass rapidly to the tank or boiler, and not be retained long enough in the coil to form steam or to get nearly as hot as it is possible, consequent with the pressure. Thus, short pipe, large diameter, with one bend, or water back with one ceplum, or if a chamber only, the water will take care of itself, according to gravity. Bubbling will be sometimes caused in a very hot tank when the pressure is relieved by drawing, on the same principle as water below 212° boils in a partial vacuum.

(16) E. R. asks how to deaden the noise of a foot lathe, so that it will not be heard in the rooms below. A. We take the following from the Workshop Companion: 1. Rubber cushions under the legs of the work bench. Chambers' Journal describes a factory where the hammering of fifty copper-smiths was scarcely audible in the room below, their benches having under each leg a rubber cushion. 2. Kegs of sand or sawdust applied in the same way. A few inches of sand or sawdust is first poured into each keg; on this is laid a board or block upon which the leg rests, and around the leg and block is poured fine dry sand or sawdust. Not only all noise, but all vibration and shock are prevented; and an ordinary anvil, so mounted, may be used in a dwelling house without annoying the inhabitants. To amateurs, whose workshops are usually located in dwelling houses, this device affords a cheap and simple relief from a very great annoyance.

(17) F. J. B. writes: I have some large Mata stone vases, with ornaments broken off in transportation, and for replacing need a nearly colorless and quickly setting cement that can be applied without heat, and that will stand outside weather if possible. Can liquid glass or white glue be prepared so as to answer the purpose? A. Try the following: Finely scraped old cheese, 1 1/2 parts; quicklime in fine powder, 1 part; mix thoroughly, moisten with milk to a paste, and use at once, as it hardens very quickly. Instead of milk a strong aqueous solution of water glass or borax may be used. White lead (in oil) applied on cotton gauze may also be used advantageously.