

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—A Manganese Property. Address Fuller & Stillman, 40 Broadway, New York.

A Machinist and Inventor desires a situation where inventive and constructive ability would be serviceable. Models designed and constructed, or inventors assisted in working out ideas. Address R. Williams, 43 Fourth St., Brooklyn, E. D., N. Y.

Models made to order. H. B. Morris, Ithaca, N. Y. For Sale.—About 4 tons fine Corundum; from No. 160 to dust. The J. Morton Poole Co., Wilmington, Del.

For Pat. Safety Elevators, Hoisting Engines and Machines, Friction Clutch Pulleys, and Cut-off Coupling, see ad. p. 61.

To Fertilizer Manufacturers.—A chemist experienced in this line is open to a two months' engagement. Will furnish apparatus and chemicals. Address F. C. B., P. O. Box 773, New York city.

Wanted.—A Second-hand Turbine Wheel. Give price and dimensions. Address E. L. Pemberton, Fayetteville, N. C.

The "Fitchburg" Automatic Cut-off Horizontal Engines. The "Haskins" Engines and Boilers. Send for pamphlet. Fitchburg Steam Engine Co., Fitchburg, Mass.

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.

The steam pipes, boilers, etc., of the Delamater Iron Works, Burdon Iron Works, and the Municipal Gas Company, are protected with H. W. Johns' Asbestos Boiler Coverings. H. W. Johns Manufacturing Company, No. 87 Maiden Lane, New York, sole manufacturers of genuine Asbestos Liquid Paints, Roofing, etc.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, borders, etc., etc., sent post free on receipt of \$2. Palm & Fichteier, 403 Broadway, New York city.

Rundell's Mower and Patterns will be sold, or licensed to manufacture on royalty, to the highest bidder. The sale will be closed March 16, 1880. Pat. Oct. 21, 1879. For further information, inquire or visit the inventor, Wm. F. Rundell, Genoa, Cayuga Co., N. Y.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa. Launches and Engines. S. E. Harthan, Worcester, Mass.

Special Wood-Working Machinery of every variety Levi Houston, Montgomery, Pa. See ad. page 45.

Brick Presses for Fire and Red Brick. 309 S. Fifth St., Phila., Pa. S. P. Miller & Son.

The Baker Blower ventilates silver mines 2,000 feet deep. Wilbraham Bros., 2318 Frankford Ave., Phila., Pa.

To stop leaks in boiler tubes, use Quinn's Patent Ferrules. Address S. M. Co., So. Newmarket, N. H.

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.

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

Presses, Dies, and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, 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.

Bradley's cushioned helve hammers. See illus. ad. p. 45.

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

Noise-quieting Nozzles for Locomotives and Steamboats. 50 different varieties, adapted to every class of engine. T. Shaw, 915 Ridge Avenue, Philadelphia, Pa.

Steve, Barrel, Keg, and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

Sheet Metal 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.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, send for catalogue to Rowley & Hermance, Williamsport, Pa.

Eclipse Portable Engine. See illustrated adv., p. 30.

Latest improved methods for working hard or soft metals, grinding long knives, tools, etc. Portable Chuck Jaws and Diamond Tools. Address American Twist Drill Co., Woonsocket, R. I.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Company, Buffalo, N. Y.

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

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

Sawyer's Own Book, Illustrated. Over 100 pages of valuable information. How to straighten saws, etc. Sent free by mail to any part of the world. Send your full address to Emerson, Smith & Co., Beaver Falls, Pa.

Eagle Anvils, 9 cents per pound. Fully warranted.

Cylinders, all sizes, bored out in present positions. L. B. Flanders Machine Works, Philadelphia, Pa.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus'd adv. p. 62.

Electro-Bronzing on Iron. Philadelphia Smelting Company, Philadelphia, Pa.

The Horton Lathe Chucks; prices reduced 30 per cent. Address The E. Horton & Son Co., Windsor Locks, Conn.

Emery Wheels of all kinds, and Machines at reduced prices. Lehigh Valley Emery Wheel Co., Weissport, Pa. Comb'd Punch & Shears; Universal Lathe Chucks, Lambertville Iron Works, Lambertville, N. J. See ad. p. 333.

Patent Steam Cranes. See illus. adv., page 62.

Nellis' Cast Tool Steel, Castings from which our specialty is Plow Shares. Also all kinds agricultural steels and ornamental fencings. Nellis, Shriver & Co., Pittsburg, Pa.

\$400 Vertical Engine, 30 H. P. See page 62.

Hydraulic Cylinders, Wheels, and Pinions, Machinery Castings; all kinds: strong and durable; and easily worked. Tensile strength not less than 65,000 lbs. to square in. Pittsburg Steel Casting Co., Pittsburg, Pa.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 61.

Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

Catechism of the Locomotive, 625 pages, 250 engravings. The most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for a catalogue of railroad books. The Railroad Gazette, 73 Broadway, New York.

Elevators.—Stokes & Parrish, Phila., Pa. See p. 61.

For Machine Knives and Parallel Vises, see advertisement, p. 61. Taylor, Stiles & Co., Riegelsville, N. J.

The Twiss Automatic Cut-off; also Vertical and Yacht Engines. N. W. Twiss, New Haven, Conn.

Elevators, Freight and Passenger, Shafting, Pulleys, and Hangers. L. S. Graves & Son, Rochester, N. Y.

NEW BOOKS AND PUBLICATIONS.

BLOWPIPE ANALYSIS. By J. Landaur. Translated by James Taylor and William E. Kay. London: Macmillan & Co. 12mo, pp. 161. Price \$1.50.

Differs from the usual run of works on blowpipe analysis in treating the matter entirely from a chemical point of view. In this way the author has sought to make blowpipe analysis more useful to the chemist without its losing any of its value to the metallurgist and mineralogist. The book is well indexed, and in every way shows the good workmanship characteristic of the house whose imprint it bears.

TREATISE ON FUEL. By Robert Galloway. London: Triibner & Co. pp. 136.

A scientific and practical text book for students in the higher schools and colleges, the subject being wisely kept within narrow limits. The one obvious lack of the book is a good index.

SOME PRACTICAL HINTS ON WOOD ENGRAVING. By W. J. Linton. Boston: Lee & Shepard.

The explanatory line on the title page "for the instruction of reviewers and the public" will prevent any unreasonable expectation from students of the practical art of engraving. As a bit of retaliatory criticism the book is entertaining.

MANUAL OF EXHIBIT BOOKKEEPING, INTRODUCING A SIMPLIFIED METHOD OF KEEPING AND AUDITING ACCOUNTS. By Selden R. Hopkins. New York: The Hopkins Company, publishers.

A work of rare simplicity and practical utility, and as unconventional as it is useful. The system taught is one that any student or business man can easily master and apply, so as to be not only able to tell at all times exactly how his affairs stand, but to do it with much less labor and liability to error than by the more complicated systems of book keeping usually employed.

MEMOIRS OF THE SCIENCE DEPARTMENT, UNIVERSITY OF TOKIO, JAPAN. Vol I, part I. Shell Mounds of Omori. By Professor Edward S. Morse. Tokio: Published by the University. 1879.

The Omori shell mounds lie on the western side of the Imperial Railway between Yokohama and Tokio, nearly six miles from Tokio and half a mile from the Bay of Yeddo. Like the prehistoric shell mounds in other parts of the world they contain abundant vestiges of the race which anciently inhabited the country, in fragments of human bones, pottery, and implements of bone and stone. Typical forms of a large number of such specimens are figured in the seventeen plates of this memoir. Though of high scientific value this first publication of the University of Tokio has an equally high industrial interest. All the figures were drawn and engraved by Japanese artists, and the composition and press work have been done by Japanese unable to speak English. The paper and binding are also Japanese. That such good work should be done under so many unfavorable conditions is much to the credit of these Yankees of the far East.

AROUND THE WORLD WITH GENERAL GRANT. By John Russell Young. New York: American News Company. 20 parts. Price 50 cents each.

The first five parts of the well written and handsomely illustrated record of travel were noticed some months ago. Parts six to ten finish Europe and carry the party to India. Burmah and Farther India are described in the thirteenth and fourteenth parts. The promise of the early numbers has been admirably fulfilled.

THE MAGAZINE OF ART. New York: Cassell, Petter, Galpin & Co. Price \$2.75 a year.

In addition to forty pages of letterpress with many engravings, the December number of this popular magazine contains three full page illustrations as follows. The Casuals, from a painting by Luke Filds, A.R.A.; Christ and Mary Magdalen near the sepulcher, by Albano; and the First Roebuck, by A. Eberle.

ODDMENTS OF ANDEAN DIPLOMACY. By Hinton Rowan Helper. St. Louis: W. S. Brian.

Chiefly devoted to a history of the claim of J. H. Colton against Bolivia for map engraving, and the Fiedler claim against Brazil for charter money for the steamship Circe engaged in transporting emigrants

to Brazil. Incidentally Mr. Helper's main "oddmoment" is developed, namely a project for an 8,000 mile double track steel railway "from the westerly shores of Hudson Bay to the midway margin of the Strait of Magellan."

DOUBLE STAR OBSERVATION MADE IN 1877-8 AT CHICAGO WITH THE 18 1/2 INCH REFRACTOR OF THE DEARBORN OBSERVATORY. By Sherburne Wesley Burnham, M.A. Reprinted from the Memoirs of the Royal Astronomical Society. Vol. XLIV.

Comprises I., a catalogue of 251 new double stars, with measures. II., micrometrical measures of 500 double stars, making a total of more than 1,400 micrometrical measurements. Many of the new doubles are naked-eye stars, and some of the most interesting class. These observations are the first contribution of the Great Equatorial of the Dearborn Observatory.

TEA CULTURE AS A PROBABLE AMERICAN INDUSTRY. By Wm. Saunders, of the Department of Agriculture. Washington: Government Printing Office.

This special report of the Department of Agriculture contains the valuable paper read by Mr. Saunders before the New York Horticultural Society, last October and duly noticed in the SCIENTIFIC AMERICAN at the time.

BORIES' UNIVERSAL POISON REGISTER. Dayton, Washington Territory: Emil Bories, publisher.

This is a blank book for recording sales of poison by druggists and others. Spaces are provided for entering the name of the poison sold, the quantity, by whom purchased and for whom, the date of sale, the alleged purpose for which the poison is bought, the name of the seller, and the residence of the purchaser. Though intended specially to meet the requirements of the laws of Washington Territory relative to the sale of poison, this record would be convenient and useful for all druggists, and if faithfully kept would have much legal and sanitary value.

BUILDING SAFE GUIDE. By Charles Marcotte, Architect. St. Louis: Slawson & Pierrot. 12mo, paper, pp. 136. Price \$1.

Mr. Marcotte has evidently had not a little unpleasant experience with tricky contractors and artisans in the building trade, and gives the world the benefit of his knowledge with the least possible reserve. He claims that his main object is the protection of owners, agents, architects, mechanics, and others engaged in the building trade; and to further this end he gives, in addition to much practical information relative to the safe transaction of building business and the materials and qualities of workshop in all the trades connected therewith, a general exposure of the various frauds practiced by dishonest contractors, builders, and mechanics.

HUBBARD'S RIGHT HAND RECORD AND READY REFERENCE FOR LEADING ADVERTISERS. New Edition. New Haven, Conn.: H. P. Hubbard, Newspaper Advertising Agent.

A convenient hand book for advertisers, containing a list of all the periodicals published in the United States and Canada, arranged in order, with population of towns, the circulation of the papers, and blank spaces for recording contracts, estimates, acceptances, 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.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

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) M. M. L. writes: I have about 6 cells of a battery, of which the outer cup is zinc, and into this fits a porous cup containing an iron core. What is such a battery called, and what fluids are used in it? A. Are you quite sure the core is iron? It should be carbon, and if it is carbon the battery is a modification of Bunsen's, and requires a bichromate solution in the porous cell and dilute sulphuric acid in the jar. See Batteries, in SUPPLEMENTS 157, 158, and 159.

(2) T. A. R. asks if there is any difference between applying an engine in the center, and at one end of a line of shafting 400 feet long? A. When power is applied to one end of a long line of shafting the speed of the machinery driven from the other end will be irregular, owing to the spring of the shaft; for this reason it is better to apply the power to the center of the shaft.

(3) T. E. M. writes: 1. I am investigating the subject of a cheap household motor with power sufficient to drive sewing machine, churn, washing machine, etc. How would compressed air answer the purpose? A. Very well. 2. Could a common wind engine, such as is used on prairies for pumping, be used successfully to compress the air for the above purpose? A. Yes. 3. If so what size would be sufficient? A. This

would depend upon the amount of power and the number of hours per day it is used. 4. Are there any air compressors in the market and at what price? A. There are large compressors driven by steam engines, prices according to size. 5. Name a good work on the steam engine, cheap work, for practical engineers. A. "Roper on Land and Marine Engines."

(4) L. P. D. asks: 1. Can the deepest portions of the ocean be sounded? If so, how? A. They have not been sounded; the deepest soundings yet taken was about 4,650 fathoms. 2. Some claim that heavy bodies will not sink in the ocean only to a certain depth, according to their specific gravity. A. Bodies of but little greater specific gravity than water will sink to the bottom.

(5) E. A. B. asks how to paint on silk. A. Stretch the silk over a board or upon a "stretcher" and paint with ordinary water colors.

(6) J. M. S. writes: I notice in SCIENTIFIC AMERICAN, for October 11, 1879, in "Notes and Queries," in answer to H. B., referring to the wear of locomotive cylinders, you say: "Do they wear most at the ends: if so they wear differently from all other steam cylinders." A moment's observation should satisfy you that they do, and that all other steam cylinders do also. Is not the pressure greatest at the ends of the cylinder, and the piston packing tighter at that point than at any other? I have never measured a cylinder that has run any length of time but what I find it largest at the ends. A. In the class of pistons in which the rings are forced outward by steam pressure, it may be true that the wear is greatest at the ends of the cylinder; but in the case of ordinary packing rings, where the pressure and friction are the same throughout the stroke, the wear will be nearly uniform.

(7) C. F. H. asks how he can get on walnut the fine finish like that seen on pianos. Have tried shellac varnish and a polish of two parts shellac and one boiled oil applied with a cloth and rubbed until polish appears. A. Apply the Wilson wood filler; when it becomes dry, give the work two coats of rubbing varnish; when this becomes thoroughly dry and hard, rub down with pumice stone and water, and then with rotten stone and water. Wash the work, allow it to dry, and lastly, apply a coat of fine flowing varnish.

(8) S. V. asks for formula for blacking transits, theodolites, etc. A. Apply to the cleaned brass surface a mixture of 4 parts of hydrochloric acid and 1 part of arsenic (by weight). Wash, dry, and lacquer.

(9) A. H. J. asks: If a cannon ball and a rifle ball be fired from opposite directions and meet on a straight line, and the cannon ball being the heavier and does not cease motion but takes the rifle ball back again, does the rifleball cease to have motion at the time of meeting? A. Yes; the motion of the rifle ball cannot be reversed, without there being a point in time when it has no motion in either direction.

(10) J. F. A. asks: What would be the proper size engine and wheels for a boat (flat bottom) 50 feet long, 14 feet beam; how many miles per hour would she make? A. With a pair of 9 inch cylinders having 2 feet stroke, and with wheels 10 1/2 feet diameter, the speed would be about 8 1/2 miles per hour.

(11) E. B. asks for information in regard to nickel plating, and wants something that can be applied to iron or steel, and if possible without battery or other apparatus. A. We know of no satisfactory way of plating iron or steel with nickel without electricity. You will find an article on the subject on p. 309, Vol. 38, SCIENTIFIC AMERICAN.

(12) F. H. writes: One telegraph wire, ordinary size, is attached to the house, by means of an ordinary insulator fixed to the window framing. At nearly all times of the day or night I am troubled by a humming noise, more or less loud, but at all times very disagreeable. Is there no simple means of preventing this annoyance? The house stands on the brow of a hill, exposed to the winds, but I have noticed the humming noise is frequently very loud when the air is quiet. What I would like is to find the cause and the cure for the trouble. A. The noise referred to is produced by the vibration of the wires by the wind. A slight and almost imperceptible breeze is sufficient to set the wires in motion. The remedy is to attach to the wire between its supports a string or wire, and attach it to some fixed object. If a wire is used it should of course be insulated.

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

F. A. P.—Iron pyrites, sulphide of iron.

COMMUNICATIONS RECEIVED.

Questions for Botanists. By G. A. H. On the Decrease in the Speed in the Earth's Rotation. By H. F.

INDEX OF INVENTIONS

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

December 30, 1879, 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, or any patent issued since 1867, 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.

Adz eyes, die and punch for forming, L. Chapman (r).....	9,907
Alloys, solution for depositing nickel, Frishmuth & Van Tronk.....	223,210
Annunciator, speaking tube, J. R. Creighton.....	223,115
Ash chute for buildings, Abendroth & Mersereau.....	223,089
Axle, car, C. E. Barnes.....	223,035