

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.

For the Development of New Ideas, try Anderson Bros., Peekskill, N. Y. Experience large.

Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for illustrated catalogue.

Sweetland & Co., 126 Union St., New Haven, Conn., manufacture the Sweetland Combination Chuck.

Burgess' Non conductor for Heated Surfaces; easily applied, efficient, and inexpensive. Applicable to plain or curved surfaces, pipes, elbows, and valves. See p. 284.

Safety Linen Hose for hotels, factories, and stores, with or without couplings. Greene, Tweed & Co., 118 Chambers St., New York.

Lubricene, Gear Grease, Cylinder and Machinery Oils. R. J. Chard, 6 Burling Slip, New York.

Power, Foot, & Hand Presses for Metal Workers. Moderate prices. Peerless Punch & Shear Co., 52 Dey St., N. Y.

The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

Corrugated Traction Tire for Portable Engines, etc. Sole manufacturers, H. Lloyd, Son & Co., Pittsburg, Pa.

For the best Stave, Barrel, Keg, and Hoghead Machinery, address H. A. Crossley, Cleveland, Ohio.

For Alcott's Improved Turbine, see adv. p. 270.

Collection of Ornaments.—A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc., sent on receipt of \$2. Palm & Fechteler, 403 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, Drinker St., Philadelphia, Pa.

Removal.—Greene, Tweed & Co. have removed from 18 Park Place to 118 Chambers St., New York.

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. Ferracute Co., Bridgeton, 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. 300.

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.

Eclipse Portable Engine. See illustrated adv., p. 284.

For best low price Planer and Mather, and latest Improved Sash, Door, and Blinn Machinery, send for catalogue to Rowley & Hermance, Williamsport, Pa.

Loud Speaking Telephones, \$5 a pair. Circulars for stamp. Agents wanted. Wm. R. Brooks, Phelps, N. Y.

Small High Speed Steam Yachts complete or in parts. Geo. F. Shedd, Waltham, Mass.

Wanted—A Specialty to Manufacture. Good Machine Shop. Wood Working Tools and Foundry. J. W. Murkland, Barton, Vt.

How to Lay Out the Teeth of Gear Wheels. Price 50 cts. Address Edward Lyman, C. E., New Haven, Conn.

Familiar as household words—the names of Estebrook's celebrated Steel Pens—Falcon, Bank, and Easy Writer. To be had from all the Booksellers, Stationers, and Newsdealers.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 300.

Recipes and Information on all Industrial Processes. Park Benjamin's Expert Office, 49 and 50 Astor House, New York.

Improved Work Holder for Lathes, Gear Cutting, Attachments for Lathes, Tyson Vase Engine, Small Steam Motor. No boiler, no danger. Send for new catalogue, 1860. Jackson & Tyler, Baltimore.

Artificial Ice Manufacturers and Brewers will find Anhydrous Liquid Ammonia, made by Larkin & Scheffer, St. Louis, greatly superior to other liquids. Packed in boxed cylinders provided with globe valves, containing from 70 to 125 pounds liquid, securing great saving of time and labor, as the cylinder is directly connected with the suction coil, and can be emptied in fifteen minutes.

Steel Figures, \$1; Letters, \$3 a set. York & Smith, Cleveland, Ohio.

Geared Power Press, cost \$450, for \$300. York & Smith, Cleveland, Ohio.

4 to 40 H. P. Steam Engines. See adv. p. 285.

A 60 to 80 H. P. Tubular Boiler, for cash, is wanted by John Hall, Fort Ann, N. Y.

15 H. P. Engines, complete order, \$150. York & Smith, Cleveland, Ohio.

AUBURN, N. Y., March 1, 1878.

H. W. Johns M'fg Co., 87 Maiden Lane, New York. DEAR SIR: In answer to your inquiry as to how we like your Paint, we are more than entirely satisfied with it. As you are aware, we are large users of paint, and of all that we have ever used, are satisfied yours is far superior; it is put on with less labor, covers better, flows more easily, has a better body, and, as far as our experience goes, will stand the weather better than any other paint we know of.

Your Roof Paint is unsurpassed; we used one coat on a tin roof, and to-day it looks as fresh and the color is as bright as when first applied. Respectfully yours,

JOSIAH BARBER & SONS.

Manufacturers of Woolen Goods and Carpetings. We take pleasure in referring by permission to the above firm, and would caution the public against worthless imitations of our Asbestos Paints. The genuine bears the name of H. W. Johns on every package.

Forsyth & Co., Manchester, N. H., & 207 Centre St., N. Y. Bolt Forging Machines, Power Hammers, Comb'd Hand Fire Eng. & Hose Carriages, New & 2d hand Machinery. Send stamp for illus. cat. State just what you want.

Silent Injector, Blower, and Exhauster. See adv. p. 300.

Portable Railroads, Sugar Mills, Horizontal & Beam Steam Engines. Atlantic Steam Engine W'ks, B'klyn, N. Y.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'rs, 23d St., above Race, Phila., Pa.

Peck's Patent Drop Press. See adv., page 301.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price, 1st free.

Brass & Copper in sheets, wire & blanks. See ad. p. 300.

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

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Valve Refitting Machine. See adv., page 300.

Cut Gears for Models, etc. Models, working machinery, experimental work, manufacturing, etc., to order. D. Gilbert & Son, 212 Chester St., Phila., Pa.

Blake Lion and Eagle Imp'd Crusher. See adv. p. 301.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in SCIENTIFIC AMERICAN of last week.

The E. Horton & Son Co., Windsor Locks, Conn., manufacture the Sweetland Improved Horton Chuck.

For Superior Steam Heat. Appar., see adv., page 301.

Special Wood-Working Machinery of every variety. Levi Houston, Montgomery, Pa. See ad. page 301.

The best Truss ever used. Send for descriptive circular to N. Y. Elastic Truss Co., 633 Broadway, New York.

Inventors' Institute, Cooper Union. A permanent exhibition of inventions. Prospectus on application. 733 Broadway, N. Y.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See ad. p. 301.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 317.

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. Pittsburgh Steel Casting Co., Pittsburgh, Pa. New Economizer Portable Engine. See illus. adv. p. 300.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 300. Totten & Co., Pittsburg.

We will purchase or manufacture on royalty, patented articles of real merit. Farley & Richards, Phila., Pa.

Lathes, Planers, and Drills, with modern improvements. The Pratt & Whitney Co., Hartford, Conn.

Hand Fire Engines, Lift and Force Pumps, for fire and all other purposes. Address Rumsey & Co., Seneca Falls, N. Y., and 93 Liberty St., N. Y. city, U. S. A.

NEW BOOKS AND PUBLICATIONS.

AROUND THE WORLD WITH GENERAL GRANT. By J. Russell Young. American News Company, Publishers. New York.

Parts nineteen and twenty of this very interesting narrative of General Grant's tour around the world are just out, which complete the series. The author, Mr. Young, accompanied the General and his family throughout their travels, and he has given in these numbers a most interesting account of the places they visited, the curious customs of the people, and the regal manner in which the party were received and entertained by the kings and queens and other official dignitaries of the many countries they visited. The entire work contains some 650 pages, and embraces 800 well executed engravings of the most interesting places visited by the General and his party, and the most curious and wonderful objects they saw during their extended journeyings.

SMITHSONIAN INSTITUTION. BUREAU OF ETHNOLOGY. INTRODUCTION TO THE STUDY OF SIGN LANGUAGE AMONG THE NORTH AMERICAN INDIANS, AS ILLUSTRATING THE GESTURE SPEECH OF MAN-KIND. By Garrick Mallery, Brevet Lieut. Col. U. S. Army. Quarto, paper, pp. 72. Washington: Government Printing Office. 1880.

An exceedingly important paper, intended at once to indicate the scope and purpose of a work upon sign language in preparation by the Bureau of Ethnology of the Smithsonian Institution, and to call out interest and correspondence upon the subject. It gives, in the form of a vocabulary, a collation of all authentic signs, with descriptions of them, and of specially associated facial expressions, with engraved illustrations when necessary; also brief considerations of the practical value of sign language, the syntax of signs, origin and extent of gesture speech, modern uses of gestures and signs, etc.

MODERN OBSERVATIONS ON RIFLE SHOOTING, WITH AN IMPROVED SYSTEM OF SCORE BOOK. By Edwin A. Perry. New York: E. Remington & Sons. Pocket book form. Leather, pp. 139. Price \$1.

This is the third edition, with additions, of Captain Perry's "Green Book," so widely and favorably known to long range riflemen. The additions embrace an article on long range with military rifles, and one on the long range tournament of last year, tabulating the results, and drawing from them such conclusions as the most advanced science of rifle practice seems to warrant. The book is all but indispensable to all who take a practical interest in the science and art of long range rifle shooting.

ENGINEER'S AND MECHANIC'S POCKET BOOK. REVISED AND ENLARGED. By Charles H. Haswell. New York: Harper & Brothers.

There are few intelligent mechanics and fewer engineers in the United States who need to be told of the existence and practical usefulness of "Haswell." The new edition—the thirty-sixth in number—has compressed within its 673 pages a marvelous amount of exact information, largely in the form of tables, formulae and condensed statements of facts, carefully classified and well indexed. As a convenient reference book for the general reader it is scarcely less useful than for working mechanics and engineers.

THE SLIDE VALVE PRACTICALLY EXPLAINED. By Joshua Rose, M. E. Philadelphia: Henry Carey Baird & Co. Cl., pp. 100. Price \$1.

Offers to practical men a clear explanation of the operations of each element in a slide valve movement, the effects of variations in their proportions being illustrated by numerous examples from recent successful practice. Thirty-five engravings.

PRACTICAL KERAMICS FOR STUDENTS. By C. A. Janvier. New York: Henry Holt & Co. 12mo, cl., pp. 258. Price \$2.50.

The author has brought together, chiefly from authorities not easily accessible to students, a large amount of practical information touching the history, composition, manufacture, and decoration of all sorts of pottery, by which term is included all terra-cottas, earthenwares, stonewares, and porcelains. The matter is well chosen, concisely put, and admirably arranged. The book is well made and amply indexed.

BRAIN AND MIND; OR, MENTAL SCIENCE CONSIDERED IN ACCORDANCE WITH THE PRINCIPLES OF PHRENOLOGY AND IN RELATION TO MODERN PHYSIOLOGY. By Henry S. Drayton, A. M., and James McNeill. Illustrated. Cloth, 12mo, pp. 334. Price \$1.50. New York: S. R. Wells & Co.

The authors have given with considerable ability a review of the system of mental science known as phrenology, with the relations of mind to anatomy and physiology as understood by phrenologists. The book contains a large number of engraved illustrations of that peculiar sort characteristic of works on phrenology.

VACCINATION TRACTS. London: William Young. 16mo, cl., pp. 320.

This volume comprises 1 to 14 of the anti-vaccination tracts, issued apparently by or for the Anti-Vaccination Society of England. They are made up chiefly of excerpts from all sorts of writings "scattered in pamphlets, newspapers, and other periodicals." Our opinion of the movement has already been given in this paper; and so likewise have the arguments of its friends.

THE FRUIT GROWER'S FRIEND: AN EASY GUIDE FOR THE RAISING OF FRUITS FOR PLEASURE OR PROFIT. By R. H. Haines. New York: American News Company. 8vo, paper, pp. 34. Price 30 cents.

A practical manual, arranged for ready reference, giving the newest and most successful ways of growing large and small fruits.

SPONSOR'S ENCYCLOPEDIA OF THE INDUSTRIAL ARTS, MANUFACTURES, AND COMMERCIAL PRODUCTS. Part 11. Treats of Coal Tar Products, Cocoa, and Coffee. 64 pp. Price 75 cents.



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) W. H. K. asks if a blow pipe is operated by a force pump having a metal condensing chamber, will it blow a steadier stream, and also stronger, if the condenser is made of elastic rubber? A. An elastic chamber is unnecessary. The air itself is sufficiently elastic to cause a ready flow.

(2) J. L. asks: If a boiler has two safety valves, namely, two inches and three inches, and both weighted alike (half inch), which would blow off first, and why? A. The three inch valve would probably lift a little in advance of the other, as there is less proportionate friction.

(3) L. W. D. asks: What is the best material for filling the space between inside and outside boards of a refrigerator? A. Sawdust is generally used and answers a good purpose as long as it is kept dry. A simple air space is effective if the walls are perfectly air tight.

(4) H. A. S. asks: Which is the cheapest boiler that can be made to run an engine 4 inches stroke by 2 inches bore? Can one be made out of common gas pipe so as to run an engine of that size? A. Yes; make one out of gas pipe not less than two inches diameter.

(5) A. V. asks if there is any means of removing stumps other than by the use of machinery. A. The following has been recommended: In the top of the stump a number of holes, each capable of holding a pound or two of saltpeter (potassic nitrate), are bored, filled with the salt, and during the latter part of the fall kept full of water, which will dissolve the salt, and the solution formed gradually passes into the roots. In the early spring the same holes are to be filled for a week or two with kerosene oil, and finally the oil-soaked stump set fire to, when the combustion will proceed, aided by the oxygen of the niter, until the greater part of the roots are consumed, after the manner of a slow match.

(6) R. E. G. asks: Is there any way of drilling a small hole in glass? I wish to suspend a pane of glass by means of a thread or fine string. I have broken a large amount of glass in trying to bore a small hole in it, but have not succeeded. A. Use turpentine, and take care when the drill is about to break its way through the glass as the hole is finished.

(7) E. B. asks: How are glass water gauges cut off to proper lengths without breaking? A. One method employed by mechanics is to break off the end of a round file, say 1/4 inch, so as to obtain a sharp edge, then with it scratch a circle on the inside of the gauge, at the proper length, and it will readily snap off where the scratch is made. Another method is to file a nick in one side and place the thumbs opposite the nick and break the glass as a stick would be broken.

(8) A. & P. ask how to make a good tooth wash. A. Take sugar of milk 100 parts, pure tannin 15 parts, lake 10 parts, oils of mint, anise-seed, and orange flowers, sufficient quantity. Rub together the lake and tannin, gradually add the sugar of milk, and then the oils.

(9) T. L. C. asks how to make common polish boot blacking? A. Ivory black 1 part, molasses one-half part, sweet oil one-eighth part. Mix and stir in hydrochloric acid one-eighth part, and oil of vitriol one-fourth part. Dilute the acid with twice its weight of water before mixing. Another recipe is to take ivory black 4 lb., molasses 2 lb., sweet oil 1 lb., oil of vitriol 8 lb. Mix and put in boxes.

(10) C. U. B. writes: I am building a flat bottomed, stern wheeled boat, 60 feet long and 16 feet beam at the water line, drawing 18 inches. What horse power engines would be required to run her? A. Two engines 10 inch cylinder and 2 feet stroke. 2. Could I not use a central crank, and dispense with one engine? A. Yes, but your engine must be equal in capacity to the two 10 inch by 2 feet stroke.

(11) A. G. writes: Cambridge Physics, article Philosophy, by Rolf & Gillet, says, page 243: "But very few substances expand when they become solid. Iron is such a substance, and it is owing to this property that it is so well adapted for castings. As it solidifies, it expands so as to completely fill the mould." If this is so why do pattern makers always make their patterns one-eighth of an inch on a foot larger than the casting required? A. The volume of iron in a molten state is less than when it is crystallized or solidified. It solidifies at a very high temperature, when it perfectly fills the mould. During the subsequent cooling it shrinks so that it becomes, when cold, smaller than the mould or pattern.

(12) E. L. M. asks: 1. In what numbers of the SUPPLEMENT can directions for making a Bell telephone be found? A. SUPPLEMENT 142 contains the information you desire. 2. Will it work without battery, through No. 17 iron wire, over a distance of 500 or 600 feet? A. Yes.

(13) S. E. J. asks why the axles and boxes to wagons, etc., are made on a taper, or smaller on the outer end than on the inside end of bearing, and would the axle being straight or crooked make any difference. I notice that all the builders make them in that way. What is the reason for it? A. All axles are not made with taper; when so made, the axles are set or bent so that the underside or wearing side of the axle is at right angle to the "dish" of the wheels. Axles are made tapering to facilitate the removal of the wheel. This would sometimes be very difficult were the axle made straight.

(14) O. R. L. writes: 1. In the SCIENTIFIC AMERICAN of October 11, 1879, you have a cut of the steamer Pellworm, dimensions as follows: Length 75 feet, beam 12, draught 3 1/2, boiler 25 horse power. With the hydromotor which is represented in her you say she will make six knots per hour, and that the engine will give to the boat 40 per cent of the power generated. Now what I wish to know is at what rate per hour would the most advantageous form of engine and screw propel this same boat? A. 10 to 12 miles per hour, depending on model. 2. What percentage of the power generated would be given to the boat? A. 50 to 60 per cent, according to the size and proportions of the screw.

(15) H. H. M. writes: In SCIENTIFIC AMERICAN of March 6, page 159, is an article on etching on glass with diluted fluoric acid. Will you please inform me how to dilute fluoric acid, or what to dilute with, and the proportion? A. Dilute the fluoric acid with water.