

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.—Present address of Thos. Symonds, machinist, formerly of Camden, N. J. W. H. C., Box 773, New York.

Wanted.—Boat-builders or others interested to apply and test a (new pat.) canal boat propeller, suitable for N. Y. canals. Address F. M. Marquis, Bellefontaine, O.

Painters.—New pat. Graining Tools for rapid and excellent work. Stamp for cat. J. J. Callow, Cleveland, O.

The Lehigh Valley Emery Wheel Co., Lehigh, Pa., sell a new Stone Plate Grinder, with traverse motion, and an Automatic Planer Knife Grinder, with a cup wheel. Cuts and descriptions sent upon application.

Wanted. To purchase a good patent for the production of iron and steel by use of gas fuel. State price. Box 7, West End, Long Branch, N. J.

Nickel Anodes, Salts, and Platers' Supplies of all kinds. Greene, Tweed & Co., 118 Chambers St., N. Y.

Curtis Pressure Regulator and Steam Trap. See p. 78.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch "Wheels," Cut-off Coupling, see Frisbie's ad. p. 78. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 76.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 77.

Lighting Screw Plates, Labor-saving Tools, p. 78.

25' Lathes of the best design. Calvin Carr's Cornice Machinery. G. A. Ohi & Co., East Newark, N. J.

The Ide Automatic Engine, A. L. Ide, Springfield, Ill. See Glassess, Telescopes, Opera Glasses, Field Glasses. Send for catalogue. Queen & Co., Philadelphia.

Brush Electric Arc Lights and Storage Batteries. Twenty thousand Arc Lights already sold. Our largest machine gives 65 Arc Lights with 35 horse power. Our Storage Battery is the only practical one in the market. Brush Electric Co., Cleveland, O.

Best Squaring Shears, Tinners', and Cannery Tools at Niagara Stamping and Tool Company, Buffalo, N. Y.

Lathes 14 in. swing, with and without back gears and screw. J. Birkenhead, Mansfield, Mass.

Blake's Patent Belt Studs. Most reliable fastening for rubber and leather belts. Greene, Tweed & Co., N. Y. The Best.—The Dueber Watch Case.

If an invention has not been patented in the United States for more than one year, it may still be patented in Canada. Cost for Canadian patent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency, 261 Broadway, New York.

Guid & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every description. Send for catalogue.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Lists 29, 30 & 31, describing 4,000 new and 2d-hand Machines, ready for distribution. State just what machines wanted. Forsaith & Co., Manchester, N. H., & N. Y. city.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

"Abbe" Bolt Forging Machines and "Palmer" Power Hammers a specialty. Forsaith & Co., Manchester, N. H.

Microscopes, Microscopic Mounting Instruments, and Materials. Send for catalogue. Queen & Co., Philadelphia.

Railway and Machine Shop Equipment. Send for Monthly Machinery List to the George Place Machinery Company, 121 Chambers and 108 Reade Streets, New York.

"How to Keep Boilers Clean." Book sent free by James F. Hotchkiss, 84 John St., New York.

Wanted.—Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven, Conn.

Water purified for all purposes, from household supplies to those of largest cities, by the improved filters manufactured by the Newark Filtering Co., 177 Commerce St., Newark, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill.

Ice Making Machines and Machines for Cooling Breweries, etc. M'et Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3083, New York city.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 189 Center 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.

Stereopicons and Views for public and private exhibitions. Send for catalogue. Queen & Co., Philadelphia.

Supplement Catalogue.—Persons in pursuit of information on 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.

Improved Skinner Portable Engines. Erie, Pa.

C. B. Rogers & Co., Norwich, Conn. Wood Working Machinery of every kind. See adv., page 62.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 92.

Steam Pumps. See adv. Smith, Vaile & Co., p. 93.

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

Drop Forgings of Iron or Steel. See adv., page 109.

Drop Forgings. Billings & Spencer Co. See adv., p. 109.

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

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

50,000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Gould & Eberhardt's Machinists' Tools. See adv., p. 109.

Barrel, Keg, Hogshead, Stave Mach'y. See ad., p. 110.

Fossil Meal Composition, the leading non-conducting covering for boilers, pipes, etc. See adv., p. 128.

Helios, Blue Process, Paper; the best made; warranted. Sold at all stationers, or Keuffel & Esser, New York.

Renshaw's Ratchet for Square and Taper Shank Drills. The Pratt & Whitney Co., Hartford, Conn.

Catechism of the Locomotive. 625 pages. 250 engravings. Most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for catalogue of railroad books. The Railroad Gazette, 73 N. Y. St., N. Y.

For best low price Planer and M'atcher, and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hermande, Williamsport, Pa.

The Sweetland Chuck. See illus. adv., p. 110.

Catalogues free.—Scientific Books, 100 pages; Electrical Books, 14 pages. E. & F. N. Spon, 35 Murray St., N. Y.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa.

NEW BOOKS AND PUBLICATIONS.

WATER SUPPLY, CONSIDERED MAINLY FROM A CHEMICAL AND SANITARY STAND-POINT. By Wm. Ripley Nichols, Professor at the Massachusetts Institute of Technology. John Wiley & Sons, New York.

This is a handsome quarto of 230 pages, evidently compiled for practical use and not merely as an exhibition of scholarship or of scientific investigation. It treats on drinking water and its analysis; on rain water; surface water; well water; driven wells; cisterns; artesian wells; filtration of water; impure ice; and kindred subjects, and corrects some popular errors regarding potable and drinking waters, and makes excellent suggestions for insuring a domestic and public supply.

PHOTO-MICROGRAPHS, AND HOW TO MAKE THEM. Illustrated by forty seven heliotype photographs of microscopic objects. By George M. Sternberg, M.D., F.R.M.S. James R. Osgood and Co., Boston.

This handsome volume, which the author in his preface, calls "little," although containing over two hundred octavo pages, is intended for beginners in the art of micro photography—a term more definite than the inverse of photo-micrography, chosen by the author. But it is a "growing" book, from first page to the end having something new and increasingly valuable to offer. The reproductions of the photographs of the microscope by the heliotype process are admirable, and present to the untutored eye a series of facts of amazing significance, and possibly of general importance. The book contains the directions for amusement and instruction combined, at a small expense, and tends to guide observers of natural phenomena to the easiest means of gratifying their inclinations.

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 the office. Price in cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) C. P. S. asks: Is it possible to construct an engine and boiler that can make side wheels drive a steamship with as much power as a screw for the same consumption of fuel? A. Yes. On a given amount of fuel a steamer will go faster, in smooth water, with side wheels, than the same engine and boiler will drive her with a screw. For river boats, such as are used on the Hudson River, the paddlewheel is the best and most efficient. The efficiency of the paddlewheel depends upon the proper and even immersion of the paddles. In a rough sea there is a loss of power in the use of paddle wheels, as the rolling of the ship and the movement of the waves will frequently leave one wheel wholly out of water while the other is unduly immersed. For sea-going vessels, on long voyages or rough waters, the screw is much the most efficient on account of the variable draught of water between the beginning and end of the voyage.

(2) C. W. B. writes: I have a great number of seals to make, and would like to have you inform me through the Notes and Queries column of your paper, of a recipe for a cheap, bright light green sealing wax. A. Mix 4 ounces shellac, 2 ounces Venice turpentine, 1 1/4 ounces resin, half an ounce orpiment, and a quarter of an ounce mineral blue. Another receipt is:

Shellac..... 24 parts. Turpentine..... 4 " Verdigris..... 6 "

To be colored as desired with a mixture of yellow and indigo.

(3) H. A. S. asks: I think of making some hay caps from cotton cloth; can you inform me how to make them water and grasshopper proof? A. Use boiled linseed oil thinned with turpentine and allow the caps to become thoroughly dried before using.

(4) W. F. C. asks: What is used in imitating turtle shell? See J. J. B.'s question, No. 22, June 2, question No. 23. A. The proportions necessarily vary with the character and intensity of the effect which it is desired to produce. We would recommend you to use a pretty strong solution of silver nitrate, say 1 part of the salt to 6 of water, and then dilute it as you find necessary. Also in forcing water into a tank at the bottom, isn't the pressure greater than to force it over the top? A. The pressure is less in forcing water through the bottom of the tank, as the height of the water column is less.

(5) M. A. S. writes: I have a silver cornet, the bell and mountings of which I wish to gild. Will you please inform me through the column of your valuable paper, the SCIENTIFIC AMERICAN, if there is a wash or other means of doing it, and what it is? I wish to avoid the use of a battery if possible. A. Dissolve 9 parts gold chloride in 1,000 to 2,000 parts distilled water; then add 360 parts potassium bicarbonate and boil for two hours. The metallic article must be coated with a film of copper simultaneously with its being immersed into the boiling gilding liquor, by placing a piece of sheet copper along with it. As soon as the deposit of copper is observed, the piece of copper is taken out, and the liquor continued boiling until a deep yellow color is obtained. The article is then taken out, washed off with water, and rubbed with a metallic brush. When the liquor has again become clear by settling and decanting, it is once more heated to boiling and the article immersed, while the piece of copper is moved about in the fluid without touching the other. This operation is repeated until a coating of sufficient thickness is obtained.

(6) J. S. B.—Consult Prescott's "Electricity and the Electric Telegraph" and "The Telephone Electric Light, and other Electrical Novelties" by the same author. Gordon's "Electricity and Magnetism" is a good work. No remedy for induction has been found; as a rule, whatever reduces the effects of induction also diminishes the power of the telephone.

(7) R. H. P. says: After considerable experiment I have succeeded in making a paste for matrices that gives us from 40 to 80 casts, average perhaps 50 to each matrix. I use two ounces of French gelatine dissolved in vinegar, then add to this one ounce alum and one quart hot water. In a separate vessel dissolve one pound starch in cold water. Then bring the water in which is dissolved the gelatine and alum to boiling point, and gradually stir in the dissolved starch, stirring all the time to prevent lumps. Boil half an hour, stirring all the time; when cold, to a pint of paste add water and one ounce of Spanish white to make matrix; use enough water to the paste so as to spread well.

(8) J. E. N. writes: We have in this village a local telegraph line, about three miles in length. We use No. 4 galvanized wire and Morse instruments wound to 20 ohms resistance (without relay). We have now twenty-five of these instruments on the line. I wish to inquire how many instruments can be placed on the line without materially increasing its length, or whether there is any limit to the number that can be used? A. If your battery power is increased in proportion to the number of instruments there is practically no limit to the number of instruments that may be put in the circuit.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted August 7, 1883.

AND EACH BEARING THAT DATE. [See note at end of list about copies of these patents.]

Table listing various inventions and their patent numbers, including Accordion, Advertising device, Agricultural implement, Air ship, Alumina manufacture, Aluminum, Animal trap, Armor for war ships, Axle box, Axle car, Bale header, Bar, Bark mill, Barrel heater, Basket, Battery, Beer, Belt tightener, Bench dog, Birth, self-leveling, Bevel carpenter's C. E. Overend, Beveling instrument, Billiard cue tips, Binder, Blast furnace, Blotter, Boiler, Boots and shoes, etc.

Table listing various inventions and their patent numbers, including Boots or shoes, Bphraim, Bottles with aerated beverages, Box, Bracket, Brake, Bristle washing machine, Building, Burner, Button fastener, Button flies, Buttons machine, Can, Canal boat, Candy, Car brake, Car brake, Car, Car coup ing, Car coupling, Car coupling, Car door fastener, Car journal lubricator, Car, railway, Car signal, Car stock, Car ventilator, Car wheel, Car wheel chill, Cars, baggage rack, Cars from one track to another, Carpets, Carriage child's, Carriage doors, Carriage jack, Carrier, Carrying system, Curtridge, Case, Caster, Caster wheel, Casting a plate for decorative printing, Earhart, Casting steel, Castings, machine for making moulds, Cell case, Chain, Chain drive, Chair, Chandelier extension fixture, Chenille ornament, Chimney sweeper, Chloride of silver battery, Chuck, Churn, Cigars, Claw bar, Cleaner, Clothes line fastener, Clothes pounder, Club foot apparatus, Coal unloading, Coin and making change device, Coke apparatus, Collar, horse, Coloring matters, Combination lock, Cooking utensil, Crane, Crate, Creamer, Cultivator, Cultivator, A. Hall, Cultivator, A. W. Livingston, Cultivator, P. W. Williams, Curtain fixture, Curtain fixture, F. G. Newell, Curtain hanger, Cut-off valve, Cutter, Decoy, Derrick, Ludlow, Developing or tracing machine, Die press, Digger, Direct-acting engine, Door lock, Doubling machine, Draught equalizer, Draughting garments, Drawings, shading, Dredging and other machines, Drill, Drilling machine, Drum heating, Dyestuffs, Earthenware vessels, Egg beater, Egg crate, Electric circuit breaker, Electric conductor, Electrical indicators, Elevator, Elevator, Parker & Peterson, Elevator safety stop, Engine, Engine reversing gear, Engine reversing gear, Envelope, Exercising and developing the muscles, Expanding bolt, etc.