Buziness 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 aseas to 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

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., Lehighton, Pa. sell a new Stove Flate 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 l'ulleys, 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.

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

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

The Ide Automatic Engine, A. L. Ide, Springfield, Ill. Sivy Giasses, Telescopes, Opera Glasses, Field Glas 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 Canpers' 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.

States for more than one year, it may still be patented in present to the untutored eye a series of facts of amaz-Canada. Cost for Canadian putent, \$40. Various other foreign patents may also be obtained. For instructions address Munn & Co., SCIENTIFIC AMERICAN Patent Agency, 261 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every descrip tion. Send for catalogue.

Nickel Plating .- Sole manufacturers cast nickel an odes, purenicke salts, polishing compositions. etc. Complete outst 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. 11., & N. Y. city.

wer & 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 Commany.

121 Chambers and 103 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, Ili. Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice (o. (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., 139 Center St., N. Y.

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

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

Supple -Persons in pursuit of int Catalogue. mation on any special engineering. mechanical, or scientific subject, can have catalogue of contents of the SCI-ENTIFIC AMERICAN SUPPLEMENT sent to them free. The SUPPLIMENT 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.

Fossil Meal Composition, the leading non-conducting overing for boilers, pipes, etc. See adv., p. 126. 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 engrav ings. Most accurate, complete. and easily understood book on the Locomotive. Price \$2.50 Send for catalogue of railroad books. The Railroad Gazette, 73 B'way, N.Y. catalogue to Rowley & Hermance, 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, Pro-fessor at the Massachusetts Institute of Technology. John Wiley & Sons, New York.

This is a handsome quarto of 230 pages, cvidently compiled for practical use and not merely as an . xhibition 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 sugges tions for insuring a domestic and public supply.

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

This handsome volnme, 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 If an invention has not been patented in the United microscope by the heliotype process are admirable, and ing significance, and possibly of general importance. The book contains the directions for amuse ent and instruction combined, at a small expense, and tends to guide observers of natural phenomena to the easiest means of gratifying their inclmations.



HIN'IS 'TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Namesand 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 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 10 \$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 SUPPLIE MENT referred to in these columns may be had at the office Price 10 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 ¹ an engine and boiler that can make side wheels drive a steamship with as much power as a screw for the same onsumption 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 P the Hudson River, the paddlewheel is the best and The efficiency of the paddlewheel pends upon the proper and even immersion of the pad-Bя dles In a rough sea there is a loss of power in the use of paddle wheels. as the rolling of the ship and the Ba movement of the waves will frequently leave one wheel wholly out of water while the other is undul vimmersed. For seagoing vessels, on long voyages or rough waters, the screw is much the most efficient on account of the Be variable draught of water between the beginning and end of the voyage.

(3) H A. S. asks: I think of making some hay caps from cotton cloth; can you inform me ho 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 tartle shell? See J. J. B.'s question, No. 22, June B 2, question No. 20. A. The proportions necessarily vary with the character and intensity of the effect B which it is desired to produce. We would recommend B For best low price Planer and Matcher. and latest you to use a prettystrong solution of silver nitrate, say improved Sash, Door, and Blin i Machnery, Send for i part of the salt to 6 of water, and then dilute it as you find necessary 2. 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 C 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 Ca 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 imnersed 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 ow. 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 noved 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

(8) J. E. N. writes: We have in this vilage 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 need? A. If your battery power is increased in proportion to the nnmber of instruments there is practically no limit to the number of instruments that may be put in the circuit.

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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 Rydraulic Jacks, and Tube ceipt is: 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, indigo.

(2) C. W. B. writes: I have a great num-Fire Brick. Tile, and Clay Retorts, all shapes. Borgner ber 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 seal-Bi Bİ ing wax A Mix 4 ounces shellac, 2 onnces of Venice Rh turpentine, 11/2 ounces resin, half an ounce or piment, and a quarter of an ounce mineral blue. Another re-Bo

Shellac	.24 p	oarte.	
Turpentine	4	8 K	
Verdigris	. 6	**	
be colored as desired with a mixture	of ye	llow	and

bar. See Claw bar. Mowing and reaping machine	Byrnes 282.843
finger bar.	Drawings, shading. H. R. Maas
Bark mill. L. Reed 282,771	Dredging and other machines discharge pipe for.
Barrel heater, P. Weidmann 282,814	J. M. Buckley 282.70
Basket, wicker, J. J. Hallock 282.516	Drill. See Grain drill. Ratchet drill.
Battery. See Chloride of silver battery. Gal-	Drilling machine. J. Miller 281,75
vanic battery.	Drum. heating, D. S. Richardson 282,56
Battery box or vessel. E. T. Starr 282,795	Dyestuffs, manufacture of material suitable for.
Beil bottom, spring, C. J. Mengel 282.746	
Beer, sirup, and distilled liquor, manufacturing.	Earthenware veseels. cover for, J. C. Thompson. 282,803
A. E. & W. E. Feroe 282,619	Egg beater. K. A. Livingood 282,73
Belt tightener, J. B. Conlan 282 500	
Rench dog, W. H. Stannard 282 792	E ecteic circuit breaker, S. M. Plush
Berth, self-leveling, F. Lebacq 282649	Electric conductor conduit, L. Bannister 282,83
Bevel carpenter's C. E. Overend 282,560	Electrical indicators, unison mechanism for, F.
Beveling instrument, L. S. starrett	H. Snell
Billiard cue tips, machine for fitting. T. Lomas 282.741	Elevator. See Grain elevator. Hay elevator.
Binder, temporary, C. Jackson 282,527	Elevator, Parker & Peterson 282.76
Blast furnace, J. J. Fronheiser	Elevator safety stop, W. Whitely 282,81
Blotter, calender, and rule. combined, W. L. Cald-	Engine. See Direct-acting engine. Gas motor
well	engine. Rotary engine. Rotary steam en-
Board. See Vehicle dash board.	gine.
Boat. See Cana; boat. Row boat.	Engine reversing gear, J. V. Moore
Boat, hoisting, detaching, and lowering, F.	Engine reversing gear, F. G. Shepard et al 282,933
Vaughan	
Boiler furnace, steam, E. Clark 233,845	Exercising and developing the muscles of man-
Bolt. See Expanding bolt.	kind, machine for, J. H. Trowbridge
Boots and shoes, manufucture of, S. F. Libby 282,911	Expanding bolt, J. M. Cornell