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.

TO RAILWAY COMPANIES AND OTHERS, requiring data concerning Water, Steam, Air, or Oil, in Pipes, or other reservoirs, when under pressure, also RECORDS OF SPEED of *Machinery, Railway* trains, Dynamos, etc., etc. EDSON'S SPEED and PRESSURE RECORDING GAUGE, and ALARM APPARATUS. A *Railway* and *Steamship Appliance* for securing greater safety to human life. The SPEED APPARATUS connected underneath the "time and pressure recording and alarm gauge." is specially adapted for factories. mills, etc., where the maintenance of any definite rate of motion is required. Upon Railways and Steamboats where Economy, Safety Time, and Speed should receive special supervision, and where every possible protection is demanded by the entire community against the results of *ignorance, carelessness, and recklessness*, such a sleepless watchman as this ingenious device is, is practically indispensable. It is obvious that charts automatically traced, which contain evidence of the rate of speed of a train, or the rate of motion of machinery, and whereon the degrees of steam pressure carried are also written, and which define the clock time occupied for any given performance, offer a *combination of evidence* at once impartial and exceptionally complete and incontrovertible; and must in all future time be of great practical value to inspectors and owners of boilers, travelers, and the public in general. The "Records" may be secured against tampering by a band and lock when desired. The apparatus, patented in America and England, is the invention of Mr. M. B. Edson, 77 Liberty Street, New York, who is the sole manufacturer, and to whom applications for information or pamphlets must be made.

For Sale.—The rights for foreign patents in a first rate profitable new invention. Patent allowed here. Thomas Hill, 48 Railroad Avenue, Jersey City, N. J.

You can buy a good Patent for Hop Growers, reasonable. Address Jacob Engle, Jr., Sharon Center, N. Y.

For Sale.—One-half or whole interest in Candian patent that has netted inventors with $500 capital $50.000 in six years in the U. S. Reason for selling, no time to develop Canada. To verify above statement, books open for examination. Address, with references, Edward Taggart, Grand Rapids, Mich.

Wonders in Electricity, 168 pp., $2. Latest and best book. All electrical books. College Electrical Eng., N. Y.

Best Popular Science Works, 15 cents each. Catalogue free. J. Fitzgerald, 20 Lafayette Place, New York.

Wanted.—Boat builders or capitalists to apply and practically test a new canal boat propeller. Address F. M. Marquis, Bellefontaine, O.

Am. Twist Drill Co., Meredith, N. H., make Pat. Chuck Jaws, Emery Wheels, Grinders, automatic Knife Grinders.

American Fruit Drier. Free Pamphlet. See ad., p. 30.

Brass & Copper in sheets, wire & blanks. See ad. p. 30.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 20,000 Crank Shafts and 15,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Diamond Tapers. S. Dickinson, 64 Nassau St., N. Y.

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

Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 30.

Cotton Belting, Rubber Belting, Leather Belting, Linen Hose, Rubber Hose. Greene, Tweed & Co., New York.

Our goods speak for themselves, and a trial will convince the most skeptical of their superiority over all others. Lehigh Valley Emery Wheel Co., Lehighton, Pa.

Fine Taps and Dies in Cases for Jewelers, Dentists, Amateurs. The Pratt & Whitney Co., Hartford, Conn.

20,000 Duc Spherical Elevator Buckets, sizes 3½ to 17 inches, constantly on hand. Telegraphic orders filled. T. F. Rowland, sole manufacturer, Brooklyn, N. Y.

First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Steam Pumps. See adv. Smith, Vaile & Co., p. 30.

Straight Line Engine Co., Syracuse, N. Y. See p. 29.

Contracts taken to manuf. small goods in sheet or cast brass, steel, or iron. Estimates given on receipt of model. H. C. Goodrich, 66 to 72 Ogden Place, Chicago.

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.

Engines, 10 to 50 horse power, complete, with governor, $250 to $550. Satisfaction guaranteed. More than eight hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinsville, N. Y.

Best Squaring Shears, Tinners', and Canners' 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.

Five foot planers, with modern improvements. Geo. S. Lincoln & Co., Prosbix Iron Works, Hartford, Conn.

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.

Farley's Directories of the Metal Workers, Hardware Trade, and Mines of the United States. Price $3.00 each. Farley, Paul & Baker, 530 Market Street, Phila.

Guild & 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.

Railway and Machine Shop Equipment.
Send for Monthly Machinery List
to the George Place Machinery Company,
121 Chambers and 103 Reade Streets, New York.

25" Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

"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. Pictet 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., 139 Center St., N. Y.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Vacuum & Steam Shafting Works, Drinker St., Philadelphia, Pa.

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

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 397.

Curtis Pressure Regulator and Steam Trap. See p. 12.

For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 14.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 12.

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Soapstone Packing, Empire Gum Core, and all kinds of Engine Packing. Greene, Tweed & Co., New York.

NEW BOOKS AND PUBLICATIONS.

NAVAL BATTLES, ANCIENT AND MODERN. By Edward Shippen. J. C. McCurdy & Co., Philadelphia, Pa.

This is a large octavo of more than 700 pages and containing a large number of illustrations. In a preface the compiler says that the collection is intended to present, in a popular form, an account of many of the important naval battles of all times, as well as some combats of squadrons and single ships. In most instances an endeavor has been made to give the causes and the results of these encounters, and no statement has been knowingly made for which authority cannot be found.

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 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) J. R. M. Writes: I am about to make some experiments in screw propulsion, and would like information on the following: 1. All other things being equal, which has shown the best results, a two, three, or four bladed screw? A. The choice must depend upon size of propeller, velocity at which it is run, and the fineness of model of the vessel. 2. Is there any rule governing the proportion of the pitch to the diameter? A. No. 3. Who is the inventor of the screw most in use? A. There have been many inventors and improvers. Smith, Ericsson, Griffiths, Stevens, etc. 4. What is the best way of making a screw for a model boat, say a screw of 3 inch diameter? A. You may cast it or have it shaped up of sheet copper or brass.

(2) H. M. P. asks: 1. Will increasing the speed of a thrashing engine from 130 revolutions per minute to 175, by enlarging separator pulley, increase power of engine, and will it save fuel? Engine 7 x 12, rated 10 horse. A. It will increase the power of the engine carrying the same steam, but will burn more fuel. 2. Is there any black paint for a boiler that will not injure the iron? A. Black varnish is good, or the "Norwood" smoke stack paint.

(3) A. S. To make one gallon of the paint for a blackboard, take 10 oz. of pulverized and sifted pumice stone, 6 oz. powdered rotton stone (or infusorial silica), ¾ lb. of good lampblack, and alcohol enough to form with these a thick paste, which must be well rubbed and ground together. Then dissolve 14 oz. of shellac in the remainder of the gallon of alcohol by digestion and agitation, and finally mix this varnish and the paste together. It is applied to the board with a brush care being taken to keep the paint well stirred so that the pumice stone will not settle. Two coats are usually necessary. The first should be allowed to dry thoroughly before the second is put on. The second coat should be applied so as not to disturb or rub off any portion of the first. One gallon of this paint will ordinarily furnish two coats for sixty square yards of blackboard. When the paint is to be put on plastered walls, the wall should be previously coated with glue size—glue, 1 lb.; water, 1 gallon; lampblack, q. s. to color; put on hot.

(4) A. J. T. asks how to reproduce faded photographs? A. The following method is simple and in most cases quite effective: Put the card in warm water until the paper print may be removed from the card backing without injury. Hang up the paper in a warm place until perfectly dry, and then immerse it in a quantity of melted white wax. As soon as it has become thoroughly impregnated with the wax it is pressed under a hot iron to remove excess of the latter and rubbed with a tuft of cotton. This operation deepens the contrasts of the picture and brings out many minor details previously invisible, the yellowish whites being rendered more transparent, while the half tones and shadows retain their brown opaque character. The picture thus prepared may then be used in preparing a negative which may be employed for printing in the usual way.

(5) E. P. asks how to produce various bronze tints (or bronzes) on iron, zinc, copper, and brass? A. Dissolve 4 oz. hyposulphite of soda in 1½ pints water, and add a solution of 1 oz. lead acetate in 1½ pints of water. The metals to be colored are placed in this liquid, which is then gradually heated to the boiling point. This treatment produces on clean iron a light steel blue color, zinc becomes bronze, and copper or brass becomes successively red, scarlet, deep blue, light blue, bluish white, and finally white with a tinge of red. This dip has little effect on lead or tin. By replacing the acetate of lead in the solution by sulphate of copper, brass becomes first of a rosy tint, then green, and finally an iridescent brown color. Zinc does not color in this liquid; it reduces and precipitates the copper as a dark brown sponge, but if boiled in a dip containing both the lead and copper salts, it becomes covered with a black adherent crust, which may be improved by coating with a thin wax lacquer. Sometimes these liquids are thickened with gum tragacanth and applied to the plates with a brush to form designs, etc., and the plates are then heated to 212° Fah., and rinsed or plunged into one of the hot baths, by which a variety of effect is produced.

(6) A. Y. F. writes: Please inform me how to make a good enamel for carriage tops. A. Use:

Asphaltum	150 parts.
Boiled oil	3 "
Turpentine	33 "
Benzine	20 "

Melt the asphaltum in the oil and add the thinners.

(7) A. W. H.—Otto of roses is made by distillation. The process is described very thoroughly in articles on page 924 of SCIENTIFIC AMERICAN SUPPLEMENT, No. 58, also on page 390, of SCIENTIFIC AMERICAN SUPPLEMENT, No. 275.

(8) C. P. writes: I have a tin roof, and would like to know if it would be best to paint it. If so, what kind of paint shall I use? A. Paint your roof with red oxide of iron, or Prince's metallic paint and boiled linseed oil. No turpentine. It is a strong, durable paint for outside work.

(9) J. H. M. asks: Will you please tell me through the SCIENTIFIC AMERICAN what paper lagging is put on to iron pulleys with? A. Roughen the surface of the pulley and fasten the paper with rubber cement.

(10) J. G. asks how to compress common salt into a solid mass. A. Melt it, and pour it in suitable forms when in a molten condition. Salt melts at a red heat and is best heated in a covered vessel; and as it volatilizes at a higher temperature, there will probably be a loss of salt.

(11) G. J. E. asks: How can I cement glass and metal? A. Mix 2 ounces of thick solution of glue with 1 ounce linseed oil varnish, or three-fourths of an ounce Venice turpentine; boil them together, stirring them until they mix as thoroughly as possible. The pieces cemented should be tied together for two or three days. This cement will firmly attach any metallic substance to glass or porcelain.

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