

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.

Interesting to Manufacturers and Others.—The world-wide reputation of Asbestos Steam Pipe and Boiler Coverings, Roofing, etc., has induced unscrupulous persons to sell and apply worthless articles, representing them as being made of Asbestos. The use of Asbestos in these and other materials for structural and mechanical purposes is patented, and the genuine are manufactured only by the H. W. Johns Manufacturing Co., 87 Maiden Lane, New York. This Company have recently perfected certain processes whereby they produce Asbestos Millboards, Sheathing, and Paper of a quality superior to any ever before produced. The Asbestos Millboard is well known by engineers throughout the world as being the only inextinguishable material for forming gaskets for "manhole plates," cylinder heads, etc. Thin Asbestos Sheathing is rapidly coming into use for rendering wooden buildings, partitions, floors, etc., fire-proof. They have also perfected the manufacture of an improved Steam Packing composed entirely of Asbestos in all sizes, from that of lamp wick to a rope of two and a half inches in diameter, which is rapidly superseding all other kinds of steam packing. This Company are also the sole manufacturers of the genuine Asbestos Liquid Paints, which not only command the highest price of any paints in this country, but are also shipped abroad in large quantities. Their descriptive catalogue is full of interesting matter pertaining to the various uses of the wonderful mineral Asbestos.

The Hollowware Cleaner Company, of Harvey, New Brunswick, are making an ingenious Cleaner for Lamp Chimneys, etc. It consists of a spear-shaped rubber bag mounted on a handle. It inflates with air after introduction within the chimney, and cleans every part thoroughly and quickly.

For Sale.—Patent of a simple and durable Plaiting Machine, making automatically and rapidly side space and box plaiting in all kinds of material. W. H. Bramhall, 123 Chambers St., New York.

Transits and Levels, second-hand, wanted. Send size, and name of maker, to Keuffel & Esser, New York. Lightning Screw Plates and Labor-saving Tools, p. 380. The Czar Revolver, advertised in another column, is offered on very favorable terms; only \$2.75, gold mounted.

\$300 cash for ent. pat. of Egg Beater. See illus. SCI. AMER., vol. xliii., page 115.

Pure Grain Nickel, Rolled and Cast Anodes, Nickel Salts. Greene, Tweed & Co., 118 Chambers St., New York.

For Sale.—1 Engine Lathe, Fitchburg, 7½ ft. x 15 in.; price, \$350. 1 Iron Planer, planes 7½ ft. x 34 in. x 30 in.; price, \$550. Address Concord Axle Co., Fisherville, N. H.

Workshop Receipts.—A reliable Handbook for Manufacturers and Mechanics. \$2, mail free. Ornamental Penman and Sign writer's Pocketbook of Alphabets. 20 cents. E. & F. N. Spon, 446 Broome St., New York.

For Sale.—Patent on Ice Machines. W. J. Lyons, Decher, Tenn.

Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N. J. Mailed free. Catalogue of Books for Engineers. Theoretical and Practical. E. & F. N. Spon, 446 Broome St., New York.

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

Telegraphic, Electrical, and Telephone Supplies, Telegraph Instruments, Electric Bells, Batteries, Magnets, Wires, Carbons, Zincs, and Electrical Materials of every description. Illustrated catalogue and price list, 72 pages, free to any address. J. H. Bunnell & Co., 112 Liberty St., N. Y.

Wood-Working Machinery of Improved Design and Workmanship. Corliesman, Egan & Co., Cincinnati, O.

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

Foot Lathes, Fret Saws, 6c. 90 pp. E. Brown, Lowell, Mass. "How to Keep Boilers Clean," and other valuable information for steam users and engineers. Book of sixty-four pages, published by Jas. F. Hotchkiss, 84 John St., New York, mailed free to any address.

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.

Punching Presses & Shears for Metal-workers, Power Drill Presses, all sizes. Power and Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N. Y.

Pure Oak Leather Belting. C. W. Arny & Son, Manufacturers, Philadelphia. Correspondence solicited.

The Best constructed low priced Engines are built by E. E. Roberts, 107 Liberty St., New York. Communicate.

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

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 348.

Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. The New Lace Cutter saves cost on each shoe. Leather out. Sample by mail, 50 cts. Greene, Tweed & Co., N. Y.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa.

Best Oak Tanned Leather Belting. Wm F. Forepaugh, Jr. & Bros., 331 Jefferson St., Philadelphia, Pa.

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y. Improved Skinner Portable Engines. Erie, Pa.

Learn Telegraphy. Outfit complete, \$4.50. Catalogue free. J. H. Bunnell & Co., 112 Liberty St., N. Y.

List 27.—Description of 3,000 new and second-hand Machines, now ready for distribution. Send stamp for same. S. C. Forsaith & Co., Manchester, N. H., and N. Y. city.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's adv., p. 350. Safety Boilers. See Harrison Boiler Works adv., p. 349.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 348.

Ajax Metals for Locomotive Boxes, Journal Bearings, etc. Sold in ingots or castings. See adv., p. 363.

The Sweetland Chuck. See illus. adv., p. 366.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vice, Taylor, Stiles & Co., Riegelsville, N. J. Skinner's Chuck. Universal, and Eccentric. See p. 365.

For Machinists' Tools, see Whitcomb's adv., p. 366.

Peerless Colors for Mortar. French, Richards & Co., 410 Callowhill St., Philadelphia, Pa.

The Twin Rotary Pump. See adv., p. 350.

Millstone Dressing Diamonds. Simple, effective, and durable. J. Dickinson, 64 Nassau street, New York.

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

50,000 Sawyers wanted. Your full address for Emerson's Hand Book of Saws (free). Over 100 illustrations and pages of valuable information. How to straighten saws, etc. Emerson, Smith & Co., Beaver Falls, Pa.

Telegraph, Telephone, Elec. Light Supplies. See p. 380.

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

Gould & Eberhardt's Machinists' Tools. See adv., p. 382.

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

The Medart Pat. Wrought Rim Pulley. See adv., p. 382.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 381.

Centrifugal Pumps, 100 to 35,000 gals. per min. See p. 381.

Pays well on small investment.—Stereopticons, Magic Lanterns, and Views illustrating every subject for public exhibitions. Lanterns for colleges, Sunday schools, and home amusement. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., N. Y.

Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 381.

Sewing Machines and Gun Machinery in Variety. The Pratt & Whitney Co., Hartford, Conn.

Portable Power Drills. See Stow Shaft adv., p. 380.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa. Draughtsman's Sensitive Paper. T. H. McCollin, Phila., Pa.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Av., Phila. P. See Bentel, Margedant & Co.'s adv., page 382.

The only economical and practical Gas Engine in the market is the new "Otto" Silent, built by Schleicher, Schumm & Co., Philadelphia, Pa. Send for circular.

Rollstone Mac. Co.'s Wood Working Mach'y adv. p. 382.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 381. Totten & Co., Pittsburg.

Electric Lights.—Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil. 4 to 40 H. P. Steam Engines. See adv. p. 382.



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.

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) G. D. wants to know what is meant by the term 10 lines, 16 lines, 17 lines, etc., used in connection with watches and telescopes? A line is one-twelfth of an inch, and is usually employed in measuring the diameter of lenses, watch glasses, etc.

(2) W. and D. ask: How will it be best for us to attach two engines of unequal size to a counter shaft, each to have only its share of the load at varying strain, such as saw mill work? The engines are 7x10 and 8x12; each has its own boiler and will carry different pressures of steam—say 80 and 100 lb. steam pressure. A. All that is necessary in this case is to proportion the driven pulleys so that when the shaft to which they are attached revolves at its regular rate, the driven pulleys will have the same peripheral speed as their respective driving wheels when running at their normal rate.

(3) L. D. S., of Ill., says: I have just put an iron force pump in a well, on a galvanized iron pipe. Was recommended to use the galvanized iron, so as to prevent the iron from rusting and giving a taste to the water. Now I am told by parties who appear to have some knowledge on the subject, that the galvanized iron is poisonous. Will you be kind enough to give your advice on the subject through the SCIENTIFIC AMERICAN? What kind of a stock or pipe would you attach to an iron force pump? A. The safest pipes are those of plain iron. Galvanized iron pipes should not be used for conducting drinking water, as the zinc dissolves and the water containing it is poisonous. We have heretofore published accounts of fatal results from the use of such galvanized iron pipes in the vicinity of Boston, Mass. In the case of our correspondent perhaps the length of his pump pipe is so small that bad

results would not ensue, provided care is taken not to use the water that has been standing for any length of time in the pipe.

(4) R. E. E. asks: How can a round stick, 1 inch in diameter, 3 feet 7 inches long, be bent on a circle the diameter of which is 33 inches? We have tried to bend them of ash, but one-third breaks in bending. We want to make them of beech and birch. Can you inform us how we may bend them without breaking? A. Submit the wood to the action of boiling water for twelve hours, then bend over a suitable form, and clamp in position until dry.

(5) J. A. P. asks: 1. Is there any cheap mode of roughing iron or steel so as to make its surface resemble that of very fine emery paper? A. It may be done by etching, by first stippling the surface with wax or some other protective coating. A sand blast would probably be cheaper if the steel were required in any quantities. 2. In what way can I coat a metal rod with rubber? A. Dip it in a solution of rubber in bisulphide of carbon, or wrap with raw rubber, and vulcanize. You can also do it by coating the rod with cement and drawing over it rubber tubing.

(6) B. T. H. asks: Is the quantity or intensity current required to work a telegraph line with metallic circuit of 600 feet in length, with two instruments? A. It depends upon the resistance of the magnets of the instruments. If they are of low resistance use a quantity current.

(7) W. W. asks: Does any action on the zinc in the gravity battery take place when the circuit is broken? A. Yes; there is more or less local action.

(8) W. M. asks: Can you give a good receipt for a cement to glue cloth to wood? I want to put a new cloth on my library table. A. See Cements, page 2510, SUPPLEMENT No. 158.

(9) J. W. J. writes: In preparing a Faure secondary battery, should the red lead be allowed to dry before the strips are rolled into a coil? A. No.

(10) S. L. G. asks: 1. How many feet of pipe, twelve feet long and two inches inside diameter, will be required to obtain eight horse power, the water to be in the pipe and the pipes in the flame? A. If pipes are twelve feet long, you will require twenty-four pipes. 2. How thick should the pipes be to allow a margin of 50 per cent for safety? A. Ordinary lap-welded water and steam pipes are amply strong. 3. I want the pipes to be horizontal. Would bridges be necessary to prevent sagging. A. If horizontal they should have a central support; but placed horizontal the steam formed cannot readily escape, and if the heat is strong there will be risk of burning the pipes. 4. At what temperature does water boil in half an atmosphere? A. 180° Fahrenheit.

(11) J. B. H. says: I have some plaster casts of jaws and teeth which I wish to duplicate. It is very difficult to do this in plaster. Is there not some elastic gelatine compound which will take the shape and pull off, which will answer as a matrix? A. Gelatine moulds are prepared from glue and glycerine. Digest good glue overnight in just enough cold water to cover it, and dissolve this by aid of heat over a salt water bath in a quantity of concentrated glycerine equal to that of glue taken. Continue the heating for half an hour, then pour into pattern. The outside of these moulds may be rendered non-absorbent of water by dipping them in solution of one ounce bichromate of potash in one pint of water, and exposing for half an hour to strong sunlight.

(12) D. R. writes: I heat my office with live steam from the boiler, and have to carry it some fifty feet or more in pipes overhead through a part of the mill where heat is not needed, and where the air is very cold owing to the outside doors being more or less open all day, and I find the steam condenses a great deal in passing through this cold room. I want something to cover them with that will prevent a considerable of this condensing. I want something that I can mix up and put on myself. Would common clay, put in a wooden box, answer? A. Perfectly dry sand may be employed advantageously in the way you suggest. Coal ashes answer very well.

(13) C. H. W. asks: What would be the effect of forcing a succession of charges, one at a time, into the cylinder of any of the different forms of explosive engines (as the Otto gas engine or the Brayton oil vapor engine), and exploding each charge by itself and preventing any escape of the gases resulting from the explosion? 1. Would the pressure accumulate and prevent the explosion of the charge? A. The pressure would have little effect upon the explosibility of the charge under the circumstances. 2. Would the pressure increase and cause the gases resulting from the explosion to condense? A. The gases produced would condense.

(14) J. K. writes: I send this day some specimens of ore. Please state in SCIENTIFIC AMERICAN what minerals they contain, if any, and whether they are worth an assay, and also what minerals such looking stone indicates? A. A calcareous trap rock; contains no minerals of value.

(15) T. and H. ask: Can you give me a receipt for a cement for securing rubber to cast or malleable iron that will stick hard, also that can be washed in hot water without injury? A. Try the following: Melt together in an iron pot equal parts of gutta percha and shellac. Apply hot. See other receipts on page 2510, SUPPLEMENT, No. 158.

(16) H. W. B. writes: In your issue of November 19, you give an article on poison. A friend and I, to decide a dispute, are anxious to ascertain the shortest time that twenty grains of cyanide of potassium will kill a person—that is to say, how soon he will be absolutely dead. A. Under ordinary circumstances insensibility and death would probably take place within ten minutes after the poison had been swallowed. The action of the poison is rarely delayed more than a few minutes.

(17) R. M. says: In this week's Notes and Queries (No. 25), E. J. D. wants to know if hot water will kill the scale bug on his orchard trees. If he will

get linseed oil (boiled) and paint it over the trunks and the larger limbs, and as much as convenient on the smaller branches, he will effectually kill this pest and do the tree much good besides.

(18) E. M. says: Referring to your answer to E. M. (3), page 330, current volume (receipt for liquid shoe polish), it should read 1½ lb. of shellac instead of ounces. I have tried it, and found that with this quantity (1½ lb.) of shellac it makes an excellent dressing for shoes, and looks well on iron if the latter is not liable to be too strongly heated. It will not stand freezing.

(19) F. R. G. asks: 1. What is the size of the induction coils used in connection with the telephone? A. In the Blake transmitter the coil is about 2½ inches long, 1¼ inches diameter, with a ½ core, consisting of a bundle of fine wires. The primary wire consists of four layers of No. 24 wire. The spool is filled with No. 36 wire. 2. What sizes of wire are generally used? A. In the Edison transmitter the coil is much larger, being about 4½ inches long, 1½ inches diameter, with a 1½ inch core of fine iron wires. The primary consists of four layers No. 18 wire, the secondary is of No. 34 or No. 36 wire.

(20) A. G. asks: How is japanner's gold size prepared? A. One gallon of linseed oil is boiled in a capacious pot for two hours; eleven ounces each of dry red lead and litharge and five ounces of copperas is then gradually sifted in while the oil is kept hot and constantly stirred from the bottom up. When the oil has been boiling about three hours, and the driers are all in, add two pounds of gum anime, previously fused and mixed with three and a half pints of raw oil, and continue the heating and stirring for about five hours, or until it hangs in strings from the ladle yet drops in lumps. Let the contents of the pot cool down somewhat, then mix it with three gallons of oil of turpentine (away from any flame or fire). This gold size ought to dry in fifteen minutes or less under favorable conditions. It improves by keeping when properly prepared.

(21) W. H. H. asks: By what process are the plumes of pampas grass colored the various colors? A. The aniline or coal tar dyes are employed for this purpose. Use a hot dilute solution in water (or water and spirit) of the appropriate color. A bath of tannin in water before dyeing renders the substance more easily and perfectly colorable. For red or reddish shades an after-bath of chloride of tin is frequently employed to bring out the color.

(22) S. H. asks: How much copper steam pipe surface is required to evaporate 2,400 pounds of saturated salt water per hour? A. About one thousand cubic feet of surface, with steam at 25 pounds pressure.

(23) E. T. S. asks: What will remove the ink put on the page of a book by a rubber hand stamp four years ago? It is both blue and red, and is an aniline ink. I have tried sulphuric, nitric, muriatic, acetic, oxalic, tartaric, and citric acids, and they are no go. A. Try the following: Digest half a pint of water with three-quarters of a pound of fresh chloride of lime (bleaching powder) for several hours; then draw off the clear liquid and mix it with about one-fourth its volume of strong acetic acid. The solution can not be kept for any length of time.

(24) J. S. W. asks: What kind of sizing will hold gold bronze on paper and bristol board so the bronze will not rub off? A. Bronzing gold size is japanner's gold size (see answer to A. G.), kept till very bright and tough from age, and then mixed with a little (about 10 per cent) of very old carriage varnish.

(25) J. P. M. says: We draw our water supply for our boilers from the river, and the water has oils and acids mixed in it from the mills up stream. Can you suggest any way to obtain relief from the oil or the acids? A. You might draw your water into tanks, let it settle for a few hours after filling them tap twelve inches above the bottom of the tanks, letting the water pass slowly through a barrel filled with coarse and fine gravel and limestone or marble, the water passing in at the bottom and flowing out of the top of the filter.

(26) F. M. writes: Will you please be good enough to decide the following question: Which has the most power: an engine 12x20, or an engine 12x24, steam 80 lb., other things being the same in both; the piston running the same number of feet per minute on each? A. The difference in useful power yielded by a 12 inch by 24 inch, and that by a 12 inch by 20 inch steam engine, each making the same piston speed, using steam at the same initial temperature, pressure, and saturation, and expanding (including ports and clearances) in the same ratio, will not be perceptible in practice. Experiments have been made that indicated a gain in short stroke engines, on account of less cylinder condensation; but it is probable that only the most careful experiments, following great exactness in construction of ports, clearances, and cut-off, would make the gain perceptible in this case.

(27) J. H. R. asks (1) how to change the specific gravity or degrees of density of sulphuric acid. For instance, I have sulphuric acid of 50°, how can I change it to acid of 66°? A. The only practical way to concentrate sulphuric acid is by evaporating off the excess of water over a fire. Vessels of platinum and lead are used to hold the hot acid. Where small quantities of the acid are to be concentrated glass vessels may be employed. 2. Will the same hydrometer do for sulphuric acid for nitric or muriatic acid? A. Yes. 3. How is potash crystallized? A. Evaporate the aqueous solution to complete dryness over a water or sand bath; then heat the mass to fusion in a clean iron pan over the fire, cover it securely, and let it cool slowly. 4. Will not wrought iron answer as well as cast iron for field magnets of a dynamo electric machine? A. Yes.

(28) J. T. C. says: I have tried to make the phosphorescent paint noticed in SUPPLEMENT of January 18, 1879, but after repeated trials have had no success, and do not know to what to ascribe my failures. Can you give me any additional particulars? A. See Phosphorescent Substances, page 53, vol. xiv. 2. I have used strontium chloride instead of strontium carbonate.