

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 property, comprising buildings, machinery, etc., formerly occupied by the New Haven Car Co., at New Haven, Conn., is for sale or lease upon very favorable terms. The location, as to railroad and tide water connections, and for securing Southern pine, lumber, and materials of all kinds at lowest cost, renders this an exceptionally favorable opportunity for parties desirous of furnishing rolling stock for railroads. For further particulars address E. H. T., P. O. Box 4114, New York.

Hartshorn's Self-Acting Shaft Rollers, 486 Broadway, New York. No cords or balances. Do not get out of order. A great convenience. Sold everywhere by the trade. See that you get Hartshorn's rollers. Makers and dealers in infringing rollers held strictly responsible.

For the best Diamond Drill Machines, address M. C. Bullock, 80 to 88 Market St., Chicago, Ill.

Hotchkiss' Mechanical Boiler Cleaner, 84 John St., N. Y., in use four years, recently simplified, reduced in price; no boiler should be without. Engineers make ten per cent selling other parties than employers.

NEWTON, N. C., January 31, 1881.

H. W. Johns Mfg Co., 87 Maiden Lane, New York:
DEAR SIR: I inclose check for last bill of paints and memorandum of what I now want.

I have used many kinds of paints, but none that equal yours in beauty of finish and durability.

Yours truly, J. B. MARTIN.

\$600.—Entire Patent Valuable Household Article. H., Station F, Phila.

Pat. Steam Hoisting Mach'y. See illus. adv., p. 140.

Clark & Heald Machine Co. See adv., p. 140.

Send ten cents for Vick's Floral Guide. See adv., page 140. James Vick, Rochester, N. Y.

A Steel Pen may not be weighty, but weighty articles, reviews, and judgments may be written with them. Esterbrook's are the standard.

Colds and Coughs need immediate attention. Use Van Bell's "Rye and Rock" for either.

See "Abbe" Bolt Forging Machine notice, page 156.

For Thrashing Machines, Engines, and Horse Powers, see illus. adv. of G. Westinghouse & Co., page 125.

Buy the Buffalo Port Forge. Have no other.

The Inventors' Institute, Cooper Union, New York. Sales of patent rights negotiated and inventions exhibited and advertised for subscribers. Send for circular.

A large manufacturing concern desires to enter into correspondence with reliable houses doing business in sinking artesian wells. Please address Drawer 81, New Haven, Conn.

Presses, Dies, and Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, successor to Bliss & Williams, Brooklyn, N. Y.

Street Sweeper, Smith's patent, for sale. Machinery Exchange, 261 N. 3d street, Philadelphia.

Second hand large size Wood Planer, R. Ball & Co. make, for sale cheap, by Wm. M. Hawes, Fall River, Mass.

Wm. Sellers & Co., Steam Hammers. See adv., p. 108.

The Practical Papermaker; a complete guide to the manufacture of Paper, by James Dunbar. \$1.00. Mail free. E. & F. N. Spon, 446 Broome street, New York.

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

L. Martin & Co., manufacturers of Lampblack and Pulp Mortar-black, 226 Walnut St., Philadelphia, Pa.

List 25.—Descriptive of over 2,000 new and second-hand machines, now ready for distribution. Send stamp for same. S. C. Forsaith & Co., Manchester, N. H.

Send to John D. Leveridge, 3 Cortlandt St., New York, for illustrated catalogue, mailed free, of all kinds of Scroll Saws and Supplies, Electric Lighters, Tyson's Steam Engines, Telephones, Novelties, etc.

Pure Oak Lea Belting. C. W. Army & Son, Manufacturers, Philadelphia. Correspondence solicited.

Within the last ten years greater improvements have been made in mowing machines than any other agricultural implement. It is universally acknowledged that the Eureka Mower Co., of Towanda, Pa., are making the best mower now in use, and every farmer should write to the manufacturers for catalogue, with prices.

Jenkins' Patent Valves and Packing "The Standard." Jenkins Bros., Proprietors, 11 Dey St., New York.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Wood Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

The "1880" Lace Cutter by mail for 50 cts.; discount to the trade. Sterling Elliott, 262 Dover St., Boston, Mass.

Experts in Patent Causes and Mechanical Counsel. Park Benjamin & Bro., 50 Astor House, New York.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 108.

Corrugated Wrought Iron for Tires on Tractor Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsburg, Pa. Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

For Machinists' Tools, see Whitcomb's adv., page 73.

Power, Foot, and Hand Presses for Metal Workers. Lowest prices. Peerless Punch & Shear Co., 53 Dey St., N. Y. Recipes and information on all Industrial Processes. Park Benjamin's Expert Office, 50 Astor House, N. Y.

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 40 John St., N. Y.

Wren's Patent Grate Bar. See adv. page 109.

Best Oak Tanned Leather Belting. Wm. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa.

Saunders' Pipe Cutting Threading Mach. See p. 109. Stave, Barrel, Keg and Hoghead Machinery a specialty, by E. & B. Holmes Buffalo, N. Y.

Wright's Patent Steam Engine, with automatic cut off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

Peck's Patent Drop Press. See adv., page 109.

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

Blake "Lion and Eagle" Imp'd Crusher. See p. 109.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 125.

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

Clark Rubber Wheels adv. See page 109.

National Institute of Steam and Mechanical Engineering, Bridgeport, Conn. Blast Furnace Construction and Management. The metallurgy of iron and steel. Practical Instruction in Steam Engineering, and a good situation when competent. Send for pamphlet.

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.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 126.

For Superior Steam Heat Appar., see adv., page 141.

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

Brass & Copper in sheets, wire & blanks. See adv. p. 140.

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

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

Eagle Anvils, 10 cents per pound. Fully warranted.

All makes and sizes of steam hammers bored out. L. B. Flanders Machine Works, Philadelphia, Pa.

Machinists' Tools and Special Mach'y. See adv. p. 141.

Rubber Packing, Soapstone Packing, Hemp Packing, Empire Gum Core Packing. Greene, Tweed & Co., N. Y.

Houston's Sash Dovetailing Machine. See adv., p. 142.

Comb'd Punch & Shears; Universal Lathe Chucks. Lambertville Iron Works, Lambertville, N. J. See adv. p. 125.

New Economizer Portable Engine. See illus. adv. p. 142.

Catechism of the Locomotive, 625 pages, 250 engravings. The most accurate, complete, and easily understood book on the Locomotive. Price \$2.50. Send for a catalogue of railroad books. The Railroad Gazette, 73 Broadway, New York.

Saw Mill Machinery. Stearns Mfg. Co. See p. 141.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 142.

The I. B. Davis Patent Feed Pump. See adv., p. 141.

Moulding Machines for Foundry Use. 33 per cent saved in labor. See adv. of Reynolds & Co., page 141.

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.

The Sweetland Chuck. See illus. adv., p. 141.

Skinner & Wood, Erie, Pa., Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement. Send for their new circulars.

Burgess' Portable Mechan. Blowpipe. See adv., p. 140.

Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N. J.

Toope's Pat. Felt and Asbestos Non-conducting Removable Covering for Hot or Cold Surfaces; Toope's Pat. Grate Bar. Chas. Toope, Mfg. Agt., 353 E. 7th St., N. Y.

Best Turkey Emery and Star Glue, specially for polishers. Greene, Tweed & Co., 118 Chambers st., N. Y.

Use Vacuum Oil Co.'s Cylinder Oil, Rochester, N. Y. Don't buy a Steam Pump until you have written Valley Machine Co., Easthampton, Mass.

Green River Drilling Machines. See ad. p. 125.

NEW BOOKS AND PUBLICATIONS.

MATERIALS AND CONSTRUCTION. By Francis Campin, C. E. London: Crosby, Lockwood & Co.

The aim of the author has been to produce a brief yet comprehensive, theoretical, and practical treatise on the strains, designing, and erection of massive works of construction, and to do it thoroughly without introducing the higher branches of mathematical investigation. Great stress is laid upon simplicity of calculation, the work being specially designed for those who wish to master the subject for practical application and not as a mathematical exercise.

FOUR LECTURES ON STATIC ELECTRIC INDUCTION. By J. E. H. Gordon, B.A. New York: D. Van Nostrand.

These lectures, by the Assistant Secretary of the British Association, were delivered at the Royal Institution two years ago.

ELEMENTARY PROJECTION DRAWING. THEORY AND PRACTICE. By S. Edward Warren, C. E. New York: John Wiley & Sons.

The fifth edition of a text book of industrial science drawing which has been for many years a classic. Improvements have been introduced in each division, and an entirely new division, on the elements of machines, has been added.

MODERN ARCHITECTURAL DESIGNS AND DETAILS. New York: Bicknell & Comstock. Part 5. Plates 33-40.

The fifth part of this series of designs and details of low-priced dwellings is devoted to details of cornices, belt courses, etc., doors, windows, mantels, in wood, and other construction elements. Plate 38 gives a perspective view of a handsome suburban residence, with elevations, plans, etc. The publishers have prepared a portfolio which serves the present purpose of holding the loose sheets, and will answer also for a permanent cover when the series is completed.

A STUDY OF SAVAGE WEAPONS AT THE CENTENNIAL EXHIBITION. By Edward H. Knight. Washington: Government Printing Office. 1880.

This reprint from the Smithsonian annual report of 1879 puts in convenient form Mr. Knight's valuable study of the savage weapons exhibited at Philadelphia. The 144 engravings show the forms of two or three hundred primitive clubs, axes, knives and swords, spears, shields, bows and arrows, etc. The text describes the construction and modes of using not only the weapons figured, but a multitude of related forms.

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.

Were new 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) F. G. asks how to protect apple trees from the borer. A. In the first place, be careful to remove all sprouts, suckers, and grass from the roots of the tree. Secondly, keep the bark near the surface smooth and clean by frequent scouring or rubbing with the naked hand. This should be done at least once a week during the months of May and June. This will brush off the eggs. Another remedy, and perhaps a more effectual one, is to take one pint of sulphur, add to it one gallon of soft soap, and tobacco water sufficient to make it of the consistency of common paint. Apply it with a brush in May or June on the body of the tree at the surface, and two or three inches below.

(2) R. E. H. asks how to join lead plates. A. The edges are brought together, hammered down into a channel cut out of wood and secured with a few tacks. The hollow is then scraped clean with a scraper, rubbed over with tallow, and a stream of hot lead is poured into it, the surface being afterward smoothed with a hot plumber's iron.

(3) M. M. asks: 1. Can you give me the composition of the perfume known as West End? A. 1 pint of each of the following extracts: Cassie, violet, tuberose, and jasmine; esprit de rose, triple, 3 pints; extract of musk and of ambergris, each half a pint; otto of bergamot, 1 oz. 2. How is aromatic vinegar made? A. Concentrated acetic acid, 8 oz.; otto of English lavender, 2 drachms; otto of English rosemary, 1 drachm; otto of cloves, 1 drachm; otto of camphor, 1 oz. First dissolve the bruised camphor in the acetic acid, then add the perfumes; after remaining together for a few days, with occasional agitation, filter. Vinaigre a la rose is made by shaking together 1 oz. of concentrated acetic acid with half a drachm of otto of roses. All concentrated vinegars are used by pouring three or four drachms into an ornamental smelling bottle previously filled with crystals of sulphate of potash.

(4) E. C. E. writes: 1. In SCIENTIFIC AMERICAN SUPPLEMENT No. 133, a article on how to build a "working phonograph," will you please explain what is meant by the diaphragm being "damped by two or three pieces of elastic tubing?" Does it mean that short pieces of gum tubing or hose are cut off and fastened to the diaphragm; if so, what size hose and how thick cut the pieces? A. Any elastic pressure will answer to damp the diaphragm; all that is necessary is to make the damping adjustable, so that the pressure may be varied to secure the best effect. Pieces of elastic rubber tube are mentioned as being the most convenient, as pieces of various sizes may be used to vary the pressure. 2. What became of the large Corliss engine used at the Centennial? A. It is running the new Pullman car shops near Chicago.

(5) D. W. C. D. writes: I have a desire to learn to be a good engineer. Where and how shall I begin? A. You should make personal application to a good engine building shop as a first step, and afterward extend your experience.

(6) W. I. T. asks for a cement that will mend a broken oil stone. A. Dissolve isinglass in the smallest possible quantity of proof spirit by the aid of gentle heat (over a water bath). In two ounces of this dissolve 10 grains of gum ammoniacum; triturate to effect solution, then add half a drachm of gum mastic dissolved in 3 drachms of rectified spirit. Stir well and keep stoppered when not in use. Liquefy by gentle heat when required for use. Clean the stonewash with hot potash lye, rinse thoroughly, and dry before cementing.

(7) W. E. S. writes: A friend was telling me of some coke being dumped between two large walnut trees and left there for some time, causing the trees to die, and it affected other trees in the same way some 15 or 16 feet away. Have you ever heard of a similar circumstance? His theory was that the rain washed something out of the coke which affected the trees injuriously. A. The cause assigned may have been the correct one, as gas coke from the front of the retort and imperfectly exhausted sometimes retains various hydrocarbons which are very destructive to vegetation.

(8) E. W. S. asks. Is there any practical way of making animal fat soluble in water? A. A sufficient quantity of caustic potash or soda added to a hot mixture of grease and water renders the grease soluble by saponifying it.

(9) W. W. S. asks: 1. Can electric lighting be adapted to a single dwelling conveniently and profitably? A. No. 2. What kind of a telephonic arrangement would be best and cheapest for communication throughout a two or three story house, and could one be adapted to such use without a battery, and language be conveyed so that none could hear but the one at the instrument (receiving end of course); and could or would a switch fixture be possible or advantageous? A. Speaking tubes are cheaper than telephones, and are preferable for your purpose.

(10) W. McG. asks how to recover saltpeter from damaged gunpowder. A. Dissolve the powder in warm water, filter the solution through fine linen bags, and then evaporate the water by boiling until the solution is of sufficient strength to crystallize.

(11) W. R. M. asks how to oxidize silver plated articles. A. Dissolve sulphate of copper, 2 dwts.; nitrate of potash, 1 dwt.; muriate of ammonia, 2 dwts.; in a little acetic acid. Warm the article and apply the solution with a camel-hair pencil and expose to the fumes of sulphur in a closed box. Parts not to be colored must be coated with wax.

(12) C. D. asks how to draw in gold on japanned work. A. The ornaments are formed by a camel-hair pencil with japanner's gold size, made by boiling linseed oil with gum animi and a little vermilion. When the size is nearly dry, gold powder or gold leaf is applied. In all cases where gold is fixed on by means of linseed oil, it will bear being washed.

(13) H. & B. ask how to refill a mercurial barometer so as to avoid the presence of air in the top of the tube. The bottom of the tube dips in a small jar of mercury. A. Invert the tube, and place in it a small quantity of mercury, say enough to fill the tube for six inches, then carefully heat the tube until the mercury boils. Add more mercury and boil again, and so on until it is full, then invert it in the cistern. Great care should be taken to not inhale the fumes of the mercury. If the tube is perfectly clean and the mercury pure it generally answers well enough to pour the mercury into the tube and cause the air to escape by gently jarring it.

(14) C. P. says: I have some valuable papers which were so thoroughly baked in a fireproof safe as to fall to pieces upon handling, and wish to know if there is any method of restoring strength to the paper by saturation or otherwise. A. The most successful method that we call to mind is to coat the charred sheets with collodion.

(15) C. E. F. asks: 1. Will an intensity current induce a quantity current? For example, I send a battery current through the primary coil of an inductorium, and produce an induced current in the secondary coil. Now, if I send that current through the secondary coil of a precisely similar inductorium, will it induce a quantity current, like the original battery current, in the primary coil? A. No. 2. Is an induced current always of greater intensity and less quantity than the inducing current? A. Yes. 3. In the first case above, which current would overcome the most resistance in flowing through a circuit, the galvanic or the induced current? A. The induced. 4. Which would overcome the most resistance, the induced current in the secondary coil, or the "extra currents" in the primary coil? Supposing the "extra currents" and the galvanic current to meet the resistance, which would be stopped and which pass through the resistance? A. They are of much the same nature, and, under like conditions, we think there would be no difference. 5. Where can I purchase Faraday's 158 philosophical papers called "Experimental Researches on Electricity," and what is the cost? A. Write the industrial publishers who advertise in our columns. 6. Have you published an index to contents of SUPPLEMENT before the half year ending December 31, 1880? A. Yes. 7. The SUPPLEMENT is a very valuable paper, but the lack of an index has been a great drawback heretofore. In how many volumes back have they had the index? A. Every volume is indexed.

(16) J. G. writes: If a machine run at a speed of 50 revolutions, and then the speed is increased to 100, will it require twice the amount of power? Three-fourths of the power is consumed in friction. What proportion of power will it require to maintain the above speed? A. The power required to overcome the friction will increase as the speed; if the work done by the machine in a given time is doubled, the power must be doubled.

(17) W. T. D. writes: 1. I am making an induction coil (for shocking) according to directions in SUPPLEMENT, No. 160. My coil measures 4 1/2 inches between the heads, with a center core of No. 18 iron wire five-eighths inch diameter. Primary coil consists of two layers of No 18 cotton covered and well insulated from each other. The secondary coil consists of 1,000 feet of No. 32 cotton covered copper wire well insulated from the primary coil, and with one Grove cell I do not get a current strong enough to feel above the elbows. The secondary was wound in a continuous coil from end to end, but has been unwound, and I will try winding in halves with an insulating medium in the center according to directions. Where is the fault with my coil—I do not use a condenser? A. Your secondary wire is too large and not long enough. Use No. 36 or No. 40, and double the length. It would be an improvement if you were to use three layers of primary wire instead of two. 2. How can I govern the current given out of this coil by sliding a cylinder over the coil? A. The cylinder is a simple brass cover sliding over the coil. You can make a greater variation by soldering together the iron wires of your core and allowing them to slide with the cylinder.

(18) M. C. writes: I have a house built on the bank of a small stream. The bank is about 30 feet high, and the house is distant from the water about 100 feet. I cannot easily get water by digging near the house. The soil is sandy. What would be the best, cheapest, and easiest way of getting the water from the stream to the house? If by damming the stream to 3 or 4 feet of a head could it be made to send the water that height by means of a small endless chain or copper wire carrying very small buckets? A. By damming the stream so as to get 4 to 6 feet head, you can use a hydraulic ram to elevate water to your house.

(19) Z. M. L. asks if there is any process of toughening pressed glass (say pieces 2 inches square, one-eighth inch thick) so that they would bend slightly and not break. Could they be colored black? A. We know of no satisfactory way of toughening the glass after pressing. The glass may be colored in the pot by introducing a suitable quantity of a soft glass highly charged with strongly calcined amber and reduced to powder. It may be superficially stained by coating the