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 Holidays, with their agreeable festivities, are approaching. The uppermost thought is, "What shall I buy for Holiday Presents for my friends?" We would cordially suggest Dr. Scott's Electric Hair Brush, advertised on our last outside page, as being a most suitable article. It makes a useful, handsome, and indispensable present.

An experienced Machinist and Engineer desires a situation as superintendent, foreman, or engineer in a machine shop, manufactory, or mill. Address C. V. Tuthill, Station B, Jersey City, N. J.

List of Machinists in United States and Canada, just compiled; price, $10. A. C. Farley & Co., Philadelphia.

For Sale, several patents. Send for circular. Geo. G. Buckland, Tulare City, Cal.

A man who has satisfactorily served as Machinist, Engineer, and Draughtsman, is desirous of securing a position. Terms moderate. Highest references. Address L. L. Duerden, 3d Ave., between 35th and 36th Sts., Brooklyn, N. Y.

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.

For Sale.—1 Engine Lathe, Fitchburg, 7½ ft. x 15 in.; price, $250. 1 Iron Planer, planes 7½ ft. x 34 in. x 30in.; price, $550. Address Concord Axle Co., Fisherville, N. H.

Workshop Receipts.—A reliable Handbook for Manufacturers and Mechanics. $2, mail free. Ornamental Penman and Signwriter's Pocketbook of Alphabets. 30 cents. E. & F. N. Spon, 446 Broome St., New York.

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. Cordesman, Egan & Co., Cincinnati, O.

Abbe Bolt Forging Machines and Palmer Power Hammersa 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. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

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

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

Electric Lights.—Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil.

Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsb'g, 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.

Ajax Metals for Locomotive Boxes, Journal Bearings, etc. Sold in ingots or castings. See adv., p. 365.

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

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

Skinner's Chuck. Universal, and Eccentric. See p. 365.

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

Draughtsman's Sensitive Paper. T. H. McCollin, Phila., Pa.

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

4 to 40 H. P. Steam Engines. See adv. p. 382.

Peck's Patent Drop Press. See adv., page 398.

For best Portable Forges and Blacksmiths' Hand Blowers, address Buffalo Forge Co., Buffalo, N. Y.

Ball's Variable Cut-off Engine. See adv., page 396.

Paragon School Desk Extension Slides. See adv. p. 397.

Brass & Copper in sheets, wire & blanks. See ad. p. 398.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa., can prove by 15,000 Crank Shafts, and 10,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Cope & Maxwell M'f'g Co.'s Pump adv., page 398.

Machine Diamonds, J. Dickinson, 64 Nassau St., N. Y.

Wanted Agency for the Sale of Patented Goods suitable to the manufacturing districts and shipping ports of England and Wales. Address W. H. Essery, Swansea, England.

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

Eagle Anvils, 10 cents per pound. Fully warranted.

Geiser's Patent Grain Thrasher, Peerless, Portable, and Traction Engine. Geiser Mfg. Co., Waynesboro, Pa.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 397.

For the manufacture of metallic shells, cups, ferrules, blanks, and any and all kinds of small press and stamped work in copper, brass, zinc, iron, or tin, address C. J. Godfrey & Son, Union City, Conn. The manufacture of small wares, notions, and novelties in the above line, a specialty. See advertisement on page 398.

Walrus Leather, Walrus Wheels, Emery, and Glue for Polishers. Greene, Tweed & Co., 118 Chambers St., N. Y.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 396.

Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., New York.

New Economizer Portable Engine. See illus. adv. p. 398.

Lathes, Planers, Drills, with modern improvements. The Pratt & Whitney Co., Hartford, Conn.

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.

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.

Saw Mill Machinery. Stearns Mfg. Co. See p. 397.

Common Sense Dry Kiln. Adapted to drying all of material where kiln, etc., drying houses are used. See p. 398.

Supplee Steam Engine. See adv. p. 397.

Don't buy a Steam Pump until you have written Valley Machine Co., Easthampton, Mass.

Blake's Belt Studs. The strongest fastening for old and new belts. Greene, Tweed & Co., 118 Chambers St., N. Y.

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

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 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) S. W. M. asks: 1. What is tea chest lead solder composed of? A. The solder used is said to be composed of 2¼ of lead and 1 of tin fused together. 2. Which is the strongest: two pieces, 2x6, spiked together, or one piece, 4x6, solid? I contend the latter; a friend, the former. A. The latter is the stronger.

(2) M. T. asks: Can you inform me whether glass is now manufactured in a spun state tough and malleable? A. Glass fibers such as you describe have not yet been produced. From the nature of the substance it is not likely that a malleable glass can be produced.

(3) M. A. M. asks: 1. How can I make a flour paste that will not sour? A. You will find good receipts for pastes under Cements, etc., in SUPPLEMENT, No 158. 2. Have you ever published anything on newspaper stereotyping—how to prepare matrix and paste for that purpose? A. See the stereotype process, page 4938, SUPPLEMENT, No. 310.

(4) R. R. asks: Can you give the usual proportions of glue, sirup, and glycerine used in making printer's rollers? Also, can you suggest any remedy to make the rollers less tacky or possess less suction in moist, humid weather? A. A good printing roller is prepared as follows: Weigh out equal quantities of good white glue and concentrated glycerine. Soften the glue by soaking it in a small quantity of soft, cold water over night, then heat it over the water bath (a strong salt water bath is preferable) with occasional stirring for five hours. Have the moulds (brass) well oiled, and give the composition plenty of time to harden in them. In stirring avoid beating air bubbles into the composition.

(5) T. H. J. asks: 1. How can I deposit a thin coating of copper on soft metal plates? The plates are composed of lead, tin, and type metal, and are about one-sixteenth inch thick and 1⅞ inch diameter. I wish to face them with copper on one side only. Can you tell me how to prepare the solution? A. Coat the parts not intended to receive a deposit with wax or asphalt varnish; wind a copper wire tightly around the edge of the plate, so as to make a firm electrical connection with the metal; then clean the surface by submitting it to the action of the wire scratch brush, and immediately connect with the wire proceeding from the zinc plate of the battery, and immerse in the following bath, facing but not touching a plate of clean copper, connected by wire with the copper or carbon of the battery. The bath may be composed of a solution of 2¼ pounds of pure sulphate of copper in a gallon of soft water. The water is first heated, the copper salt dissolved in it, and the bath allowed to cool before using. 2. Also, describe how to construct a cheap battery. A. For details of the construction of batteries see SUPPLEMENTS, Nos. 157, 158, and 159.

(6) F. P. S. asks: 1. Can the magneto-electric machine, described in No. 23, SCIENTIFIC AMERICAN, be used for plating small articles of hardware? If so, would it want to be arranged for "quantity" or "intensity?" A. Yes, for quantity. 2. Does hydrogen gas, when mixed with air, form an explosive compound? A. Yes. 3. If so, what proportion of each is necessary for the most marked results? A. For the pure gases, two volumes of hydrogen and one of oxygen, at the same temperature. 4. Is the explosion of the nature of a collapse or an expansion? A. The temperature accompanying the reaction momentarily expands the aqueous vapor formed beyond the volume of the mixed gases used, and the result is an explosion, not a collapse. 5. What is the explosive force per square inch? A. We have no data at hand on this point. It depends greatly upon the conditions—temperature, pressure, etc.

(7) J. A. B. asks: What is the best kind of oil or oils, or ingredients with oil, to use on canvas tents or wagon covers to make them waterproof? I have used linseed oil and beeswax, but the odor from it in summer is very unpleasant, and in winter it freezes so easy that you cannot handle it without first thawing out, as it will all break to pieces just like glass. What I want is something that will leave it pliable, have as little odor as possible, and will not mildew when rolled up wet or stick together in warm weather. A. You will find the information required under Waterproofing, page 81, vol. xlv.

(8) E. M. asks: 1. Will a furnace grate made of pipe for heating water and making steam get coated and stopped up with lime or other impurities in the water if a constant and forced circulation is maintained? A. If the water contains much lime it would gradually deposit and eventually choke the pipes. 2. If so, is there anything that can be put into the water that will prevent it and keep the pipes clean? I propose to supply my grate with water by attaching to the city water pipe, which will furnish a pressure of 40 pounds to the square inch. A. An examination to ascertain the precise nature of the impurities contained in the water would be necessary to properly answer the question.

(9) G. D. asks: What is the best process for melting platinum on a small scale? I cannot get up heat enough to melt it with charcoal fire. Do you know of a book published on compounding metals that would give the information? A. Platinum is melted in flat lime crucibles in the flame of a blowpipe fed with oxygen and hydrogen. It cannot be melted in any ordinary furnace. For books on metallurgy see addresses of bookdealers in our advertising columns.

(10) D. J. F. asks: How can I make a white ink that will write on black paper or card; and also, how to make a good black ink suitable for card writing? A. You will find good receipts for white and black ink in SUPPLEMENT, No 157.

(11) L. J. asks: Can an iron railroad tie, in your opinion, be made practicable? A. Yes; iron ties are in use.

(12) M. J. K. asks: 1. Can you give me a receipt for making a quickly drying polish or varnish to be applied to small turned articles while in the lathe? I want a hard and glossy surface. A. Dissolve ten ounces shellac in one gallon of wine spirit by gently heating over a water bath and stirring. Let it stand for several days in a covered vessel, then draw off the clear portion from any sediment, for use. 2. Can you give me some method of ebonizing articles of this kind? A. Put the wood for about half an hour into a hot solution of one ounce of logwood extract in a quart of water, and then transfer to a warm solution of one pound of copperas in a gallon of soft water, and let it remain in this bath for several hours. Give the pieces a second dip in the logwood and iron liquors, then rinse and dry.

(13) J. W. C. asks: 1. Will you please give receipt for making a stove polish paste that can be put on a stove when hot or cold, and will give a good polish without much friction? A. Reduce pure graphite to finest flour by grinding it in the moist state. Then mix into a stiff paste with a sufficient quantity of hot water in which has been dissolved perchloride of iron in the proportion of a quarter of a pound chloride to the gallon of water. Let it stand, with occasional stirring, for two weeks before using it. A few drops of oil of almonds or cloves may be added to the paste to cloak any unpleasant odor. 2. Please give me directions for making the liquid insulation that I find on wire on Ruhmkorff coil. Think it is varnish, or something similar. A. Use ordinary alcoholic shellac varnish mixed with enough vermilion to give it a suitable color.

(14) N. J. S. writes: At present the hemp, binder's twine, passing through the spindles of our balling machines, cuts the edges of the hole in deep grooves. The hardest steel bushings are soon cut, and the twine is thereby injured. As an experiment, we want to countersink a porcelain "pot-eye" in the bushing, to obviate this cutting, if possible. What cement will secure this pot-eye in its place, fastening porcelain to iron? A. You had better try some mechanical method of securing the porcelain on the iron; cement cannot always be depended on for such a joint. You can try the following cement: Melt together in an iron vessel over a moderate fire gutta percha and shellac in about equal proportions, and stir well together. Use hot.

(15) H. L. asks: What is meant by the expression "level of the sea?" A. It is the average level of the water of the ocean where it touches the land.

(16) T. S. asks how two pieces of broken cast iron can be soldered together. A. See answer to A. G., on this page.

(17) A. G. asks (1) how to solder brass and iron together with soft solder. A. Dissolve zinc in muriatic acid until action ceases. Reduce with water, and apply to the surfaces to be soldered. If the brass and iron are clean there will be no difficulty in soldering them together with a soldering iron or blowpipe. 2. How is the wipe lead joint made? A. See Plumbing, in SUPPLEMENT 309.

(18) O. W. B. asks: How can I get a gold plate off a silver watch? A. If the plate is thin dip it momentarily in a little mercury and rub with a piece of soft chamois leather. Repeat the dipping (in fresh mercury) several times or until the gold color has been removed. Then heat the case until the film of mercury adhering to the silver has been dissipated. The mercury should not be allowed to remain too long in contact with the silver. The case should, of course, be separated from the works before being operated upon.

(19) D. H. D. asks: 1. What kind of carbon is used in Blake's transmitter used in connection with the bell telephone? A. Hard electric light carbon. 2. What kind of spring holds it in contact with the diaphragm of the transmitter? A. A piece of watch spring. 3. Is the diaphragm used in Blake's transmitter the same as that in the bell receiver? A. No; it is thicker. It is made of ordinary Russia stove pipe iron. 4. Why are not the Blake and Edison transmitters virtually the same, as the varying conducting power of the carbons under different pressure seems to be the principle on which both act in the telephone? A. The action is about the same when the Blake is working normally. 5. In what number of the SCIENTIFIC AMERICAN is Blake's transmitter fully described? A. SCIENTIFIC AMERICAN SUPPLEMENT, No. 250.

(20) G. F. M. writes: I am making a small magneto electric machine of the Clarke pattern, only with this difference: I intend to use two armatures, one on each side of the exciting magnet. What I wish to know through your correspondents' column is: Cannot I use an electro-magnet instead of permanent horseshoe magnets, and pass the current from the armature coils through its coil from the commutator before using it on the outside for work the two armatures will be set at right angles to each other. A. You can arrange the armatures and magnets as you propose; but for a very small machine permanent magnets are to be preferred to electro-magnets.

(21) D. C. asks: Do you know of any comprehensive tabular statement of liquids generally showing their specific gravity, specific heat, boiling temperatures, ratio of expansion upon being converted into steam under the ordinary pressure of the air, and caloric of fluidity of steam; or does there exist materials for compiling such a statement readily? A. Consult "The Constants of Nature," part I., published by the Smithsonian Institution, Washington, D. C.

(22) S. E. writes: Some time ago we put a set of condenser pipes on our launch which lasted only about five months. The pipes were made of some kind of brass or copper composition, 1¼ inch, tin lined. Fearing they would give out at any time we replaced them with a set of galvanized iron ones, 1½ inch; but they only lasted about four months, being completely honey-combed, as were the others, as far as the tin lining. We then replaced the second lot of pipes with the first set, having first given them a coat of a mixture of tar and asbestos, filling all the holes well with the mixture. Now we are in a fix. The pipes are of no use to us, for they will not condense. They worked very well before we covered them. What is wrong, and what kind of pipe should we use, and how long should a set last on our launch, which is covered with yellow metal? The launch is used only eight months of the year, the balance of the time at anchor. A. Copper or tinned copper pipes are the best for condensers. They are less affected than brass or iron. Asphaltum is a very poor heat conductor, hence the failure of the coated tubes. no varnish or enamel is admissible.

(23) W. E. F. asks: Why does solder melt under the soldering "iron," when it will not under real iron, and why is it necessary to have the tool coated with tin? Does it act as a flux? A. Solder will melt under any hot iron, but unless the iron (or other metal) is perfectly free from oxide, perfect contact between the melted solders and the "iron," which is essential, cannot occur. When properly cleaned and coated with tin (or solder) the coating prevents reoxidation of the metal while heating, and the fluid metal follows and can be directed by the tool.

(24) C. W. G. asks: What can be used for blacking scraps of upper leather on the grain side? It must be something that will not smut when dry, and do the work with one application. A. Dissolve one pound of good sulphate of iron in two quarts of warm soft water. It may be applied with a brush or by dipping.

(25) C. and S., of Halifax, N. S., write that they are driving a lot of sewing machines and a Siemens electric light machine with a five horse power caloric engine. They secure uniform motion by applying a four-foot balance wheel to the countershaft of the electric light machine, and say that the light is steady.

(26) C. E. R. writes I am thinking of having a "secondary battery" made for experimental purposes, and wish to ask if you can give or direct me to any lately acquired knowledge relative to its construction? A. We believe the latest thing in this line is to confine the minium in folds in the lead plates. Woolen flannel as a separating medium is preferable to cotton fabrics.

(27) S. M. asks: Can you inform me how the frosted appearance is given to new silver goods, such as bracelets, broaches, cups, portions of claret jugs, etc, and how I can make some coarse and others finely frosted, according to the article, be it large or small? I should also be thankful if you can give me the same information concerning 18 carat gold. I have often desired a frosty appearance on masonic and other jewels, and for lack of which my make of jewelry very considerably falls short of finish. I have tried several acids mixed, but with only a sprinkling of success, never approaching near to the frosted appearance I see

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