

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.

SAVANNAH, November 14, 1881.

H. W. Johns Mfg Co., New York:

GENTS: . . . The Savannah Cotton Press Association have four batteries of boilers and three pipe connections covered with your Asbestos Cement. I am fully satisfied we save at least fifteen per cent in fuel over the old method. Respectfully, SAM'L J. WHITESIDE, Chief Engineer, Savannah Cotton Press Association.

Send name and address to Cragin & Co., Philadelphia, Pa., for Cook Book free.

The Lehigh Valley Emery Wheel Co., Lehigh, Pa., sell a new Stone Plate Grinder, with transverse motion; and an Automatic Planer Knife Grinder, with a cup wheel. Cuts and descriptions sent upon application.

Blue Process Paper is made by Keuffel & Esser, 127 Fulton St., New York. Send for circular.

Horizontal Engine, 20 in. cyl. by 48 in. stroke, for sale new. Atlantic Steam Engine Works, Brooklyn, N.Y.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y.

The Newark Filtering Co., of Newark, N. J., are filling orders from cities and manufacturers for their "Multifold Filters."

To Stop Leaks in Boiler Tubes, use Quinn's Pat. Ferrules. Address S. M. Co., So. Newmarket, N. H.

Malleable and Gray Iron Castings to order, by Capital City Malleable Iron Co., Albany, N. Y.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J.

Combination Roll and Rubber Co., 27 Barclay St., N. Y. Wringer Rolls and Moulded Goods Specialties.

Send for Pamphlet of Compilation of Tests of Turbine Water Wheels. Barber, Keiser & Co., Allentown, Pa.

Presses & Dies (fruit cans) Ayar Mach. Wks., Salem, N.J.

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

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

"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.

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, Ferracite Mach. Co., Bridgeton, N. J.

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

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

Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Cans. E. W. Bliss, Brooklyn, N. Y.

Improved Skinner Portable Engines. Erie, Pa.

Cope & Maxwell Mfg Co.'s Pump adv., page 108.

The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 110.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's adv., p. 108.

Safety Boilers. See Harrison Boiler Works adv., p. 109.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 109.

4 to 40 H. P. Steam Engines. See adv. p. 108.

Ajax Metals for Locomotive Boxes, Journal Bearings, etc. Sold in ingots or castings. See adv., p. 125.

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

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 124.

Skinner's Chuck. Universal, and Eccentric. See p. 126.

For the Garden and Farm.—A great variety of Seeds and Implements. Send for catalogue. Address R. H. Alien & Co., P. O. Box 376, New York city.

See Bentel, Margedant & Co.'s adv., page 140

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

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

Telegraph, Telephone, Elec. Light Supplies. See p. 141.

For Walrus Leather, Bull Neck Emery, Glue, Crocus, and Composition, write Greene, Tweed & Co., 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.

Eagle Anvils, 10 cents per pound. Fully warranted. Peerless Colors for Mortar. French, Richards & Co., 40 Calowhill St., Philadelphia, Pa.

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

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

Gould & Eberhardt's Machinists' Tools. See adv., p. 141.

For Rubber Packing, Soapstone Packing, Empire Packing, and all kinds, write Greene, Tweed & Co., N. Y.

The Medart Pat. Wrought Rim Pulley. See adv., p. 141.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 140.

Centrifugal Pumps, 100 to 35,000 gals. per min. See p. 141. Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 141.

Drop Hammers, Power Shears, Punching Presses, Die Sinks. The Pratt & Whitney Co., Hartford, Conn.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 140.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blind Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

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.

The Porter-Allen High Speed Steam Engine. South-work Foundry & Mach. Co., 430 Washington Ave., Phila., Pa.

Portable Power Drills. See Stow Shaft adv., p. 140.

The Sweetland Chuck. See illus. adv., p. 142.

Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 141. Totten & Co., Pittsburg.

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

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



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) A. G. M. asks: 1. Where is it best to pump water into a stationary boiler, locomotive build? We now pump into side of back end from fire-box door, but would like to change to the bottom of the front or fire-box part behind, where the ash pit is, but outside, of course. Would it not answer as well? A. It is not well to feed against any part of the fire-box. Feed near the bottom of the cylinder part of the boiler furthest from the fire, and where there is a large water space in the boiler. 2. What pressure should a small upright boiler stand, 24x60, used quite a while, but apparently in good condition? What size safety valve should it have? A. We cannot say what pressure, without knowing the thickness of the iron and its condition.

(2) G. S. asks: What is a surface blow-off valve with a scum pipe inside of boiler; how made, etc.? A. It is an ordinary blow-off valve or cock, with a connecting pipe to a long narrow pan inside the boiler, the upper part of the pan open, the pan fixed so that its upper edges is about or just above the surface of the water; the floating scum collects in this pan, and when the valve is opened is blown out.

(3) E. S. asks: Which of the two balance wheels will give the most power and run the steadiest for a foot lathe: a 14 inch wheel, weight 25 pounds, geared to run three times faster than the crank shaft, or an 18 inch wheel, weight 50 pounds on the crank shaft? A. The small wheel at three times velocity of crank shaft.

(4) W. M. S. asks: Where is the largest chimney in the world, and what is its height? A. We believe at Fort Dundas, near Glasgow, 454 feet above ground. The St. Rollox chimney (near Glasgow) is 435½ feet above ground.

(5) H. S. N. asks: 1. What is the best thing to kill water bugs? I have tried borax—it doesn't work very well. A. Use plenty of finely powdered dry borax, injecting it, by means of a small bellows, into all cracks and crevices. We have found this to be a sure remedy. 2. Is there anything better than lime for an oxyhydrogen light? A. We believe there has been no good substitute for lime in this connection yet discovered. 3. What proportioned boiler would be used for an engine with two inch stroke, diameter of cylinder one inch? A. A boiler having 1¼ to 1½ square feet heating surface.

(6) J. B. M. asks: Are pearls out of mussel shells of any account? A. Yes; if fine.

(7) W. P. asks: Will you please inform me which gives the most powerful light, the oxyhydrogen or oxycalcium? A. The oxyhydrogen, so called—if by oxycalcium a light wherein alcohol or oil is made to take the place of hydrogen in connection with oxygen upon lime.

(8) A. E. B. asks: Will you please give us a process for eborizing wood, and what wood is the best? A. Digest the wood for an hour or more in a strong hot solution of extract of logwood; then in a strong cold solution of iron sulphate (green copperas). The baths may be prepared by dissolving three-quarters of a pound of logwood extract in 2 gallons hot water and 1 pound copperas in 1½ gallons water. Repeat the digestions if necessary until the wood is properly stained. Light porous woods are most easily stained, but any variety of wood may be blackened by this process.

(9) G. W. B. asks: 1. Has pure nickel any physical or chemical properties that would make a watch case superior to one of silver? A. Nickel is

very much harder than silver and will wear longer. It is also much less malleable and stiffer, and of a lower specific gravity. 2. Is there a company in the United States making such cases of solid pure nickel? A. Yes, there are several.

(10) B. B. B. writes: I am about getting a small steam yacht, and a friend of mine has an iron hull, 34 feet long, 8 feet beam, but I think she has beam enough for the length. I want to run it on the Delaware River. What size and shaped boiler and what size of engine do I require to get the best results? A. The boat has beam enough for her length. The usual inverted direct acting engine, 6 inches diameter of cylinder by 6 to 8 inches stroke. A horizontal return tubular boiler, or a vertical one, to be of a size suitable for the engine. The horizontal will be best, as it will sit lower in the boat.

(11) R. C. B. asks: Can power be conveyed by a rope (not a wire rope) to a good purpose? I wish to convey power about 150 feet, for the purpose of driving a wood lathe and a circular saw for ripping inch lumber. The rope would be under cover. What size rope would I want? A. Yes; but a hemp rope would wear rapidly. The size would depend on the velocity; but we think a rope three-quarters inch or seven-eighths inch diameter sufficient. Use a good hemp rope—not manila—and keep it well protected from the weather.

(12) W. H. P. asks: Will you please inform me through SCIENTIFIC AMERICAN the cheapest and best way of making nitrous oxide gas for dental purposes? A. Heat a quantity of pure ammonium nitrate in a glass or iron retort over a sand bath until the gas begins to be evolved therefrom. This consists chiefly of nitrous oxide (so-called) and steam. It is purified by passing it slowly through a strong aqueous solution of sulphate of iron (green copperas) which absorbs any nitric oxide present. It is then ready for inhalation.

(13) B. W. S. J. asks: 1. How can holes be drilled in china or glassware? A. Use an ordinary machine drill (of hard tempered steel), and moisten the parts with turpentine. If the holes are to be "hand bored" use a bow with hempen string twisted once about the drill, held in and directed by a loose clutch handle, the motion of the bow backward and forward causing the drill to rotate rapidly against the surfaces to be drilled. 2. How can scraps of sperm candles be restored to their original white color after having been melted and remoulded? A. Pass the melted material through a warm sand or clear charcoal filter, which will retain the particles of carbonaceous matter, to which the color is due.

(14) N. P. asks: How much face will be required to give an overshot waterwheel sufficient power to run a fifty inch circular saw, and also the number of square inches vent under a two-foot head of water, and the number of revolutions the wheel should make per minute and the revolutions of the saw? The wheel is a nine foot over shot. A. The power required depends upon the amount of work to be executed; but we suppose you require at least 20 horse power. Three times this, or 60 horse power, can be readily applied to a saw 50 inches diameter; but for 20 horse power you will want 14 feet face, or, better, 15 feet. Make about 10 revolutions per minute, and the vent about 650 square inches.

(15) H. A. R. asks: Can you give us a receipt for the white plating seen on cheap table ware, etc. It is neither silver nor nickel, but in some respects resembles both, though the color is closer to a white alloy of tin and zinc. One man says it is done by dipping into hot metal; another by boiling in a liquid for fifteen or twenty minutes. A. You will find practical directions for plating of all kinds in SUPPLEMENT, No. 310.

(16) G. F. K. asks: 1. What is the right temperature of a drying room for evaporating apples? A. About 100° Fah. 2. How many square feet of heating surface steam pipe should I have (using live steam) for a room containing 400 cubic feet of air? A. About 130 square feet.

(17) C. W. W. asks: What is the lifting power of one cubic yard of coal gas? A. It varies considerably according to the method of manufacture—usually something less than one pound per cubic yard (27 cubic feet).

(18) R. & B. ask: 1. Is sugar maple wood good for paper making? A. Yes, but it is not commonly used, as there are better and cheaper woods obtainable. 2. Would it pay to make paper pulp, where shavings of said wood are to be had in large quantities for nothing, and good soft water abundant, also water power? A. Very probably, if the pulp could be manufactured near at hand and on a sufficiently large scale. 3. Is the machinery to convert shavings into pulp very costly? Which would be lowest estimate of the same? A. Not necessarily; a small plant could probably be procured at a cost of a few hundred dollars. 4. Where can information about this matter be obtained in particulars? A. Address machine builders who advertise in our columns.

(19) Mrs. M. J. D., referring to our reply to B. C. B., respecting the removal of lime incrustations choking the pipes of a water-back, calls our attention to the fact that petroleum (or refined coal oil) may and has been used to advantage in softening such lime incrustations so that they may be readily detached (as a whole or in pieces) from the metal. In the case in point it should be noted that the question is not how to loosen, but how to remove the incrustation without disconnecting all the pipes or taking out the water-back—an operation which obviously involves solution or some similar process, not within the power of petroleum or any similar oils to accomplish. A. A practical solution of the question would be of much interest to many householders as well as to engineers and plumbers.

(20) R. O. K. writes: We have a planing mill in this town, and last week the engineer discovered that the boiler used in the establishment leaked steam somewhere at the back end. One of the men in the mill

took some brick off the top and he could see the steam coming out of the boiler in a jet about as large as a pin. He put a cold chisel to the place and struck it a light blow, and the chisel bedded itself in the head. They sent for me to look at it, but it was too hot to go inside to examine it. I gave it a few blows with my hammer, and the head gave way at every blow for about 18 inches along the head just above where the upper braces were riveted on. When the boiler was cool I went inside and examined it, and found that the head was rusted nearly all away. In some places the iron was not one thirty-second of an inch thick, and they had had 65 pounds of steam that morning, but at the time when they discovered the leak they had only 25 pounds. The boiler is 10 feet long, 40 inches diameter, and 36 3-inch flues, and has been in use about eight years. It has not been running much more than half the time. Now, could you tell me the reason of the corrosion, and why it did not explode? A. As to the cause of the corrosion we could not say without examination of the iron and the water. It is fortunate that the weakness was discovered in time to prevent an explosion. It would have soon blown out, and the destruction would have depended on the character of the initial break. A boiler not in use will deteriorate more rapidly, as a rule, than if constantly worked. So far as we can judge the head was not braced sufficiently, and there has been a constant springing or movement of the head, thus favoring rapid oxidation by constantly presenting new surface.

(21) P. R. asks: 1. Can a bar of steel six inches by one and a half inches be strongly magnetized by a Holtz electric machine that gives a spark six inches long? A. No. 2. How many cells (if any) of the secondary battery described in SCIENTIFIC AMERICAN, June 25, 1881, page 406, can be charged by the same machine? A. The secondary battery is only very slightly affected by the current from a Holtz machine. 3. In what proportion does the spark increase from a single to a double Holtz electric machine? A. There is no increase in length of spark. Increasing the number of plates makes the spark larger. 4. How can I make it self charging? A. By applying to it a small frictional machine to be worked by the same handle that is used to turn the Holtz plates. 5. How should it be arranged for medicinal purposes? If your space does not allow a full answer to this question, please refer me to some work on that subject, as I should need a good deal of information on this point. A. See SUPPLEMENTS 278, 279, 282. 6. Does it in any way interfere if points, conductors, and discharging rods are varnished? Also, would it be well to varnish the plates and inductors? A. Varnishing the brass work does no harm, and you will derive no benefit from varnishing plates. 7. Suppose the electrical condensers to be eight by two inches diameter and covered half way, and the electrical tensions sufficient to overcome the distance: would not the spark discharge from the external coating to the chain that connects the inside coating with the conductors of the machine (distance five inches only) instead of going down the jar to the inside coating? (distance eight inches), if not why? A. It might discharge both ways. The surface of the jar offers a partially conducting surface over which the electricity would pass rather than leap the space between the side of the jar and the chain. 8. Will increase of surface in the condensers increase the spark? A. It will make the spark "fatter," but the discharges will be less frequent. 9. How can I polish the glasses in a pair of spectacles that is very dull? A. This is impossible without proper tools. Better buy new glasses.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

L. J. R.—It is a variety of pyrrhotine—a native magnetic sulphide of iron. It contains a little antimony and copper and probably a trace of nickel. A quantitative analysis would be necessary to ascertain its value.

COMMUNICATIONS RECEIVED.

How to Raise Early Corn. By S. E. T.
A Simple and Cheap Barometer. By G. H.

NEW BOOKS AND PUBLICATIONS.

U. S. COMMISSION OF FISH AND FISHERIES. SPECIAL BULLETIN. A MONOGRAPH OF THE SEAL ISLANDS OF ALASKA. By Henry W. Elliott. Washington. Government Printing Office. Quarto, pp. 176.

This valuable monograph, embodying the personal observations of the author during four seasons, 1872, 1873, 1874, and 1876, gives the first minute scientific account of the life and habits of the North Pacific fur seals and sea lions that has been written. Indeed the minuteness of Mr. Elliott's observations prevented the use of the work as a portion of the report of the tenth census, for which it was intended. Thanks, however, to the enterprise of Professor Baird, an edition was secured for the Smithsonian Institution and issued under its auspices. The report is illustrated by maps and numerous engravings.

MARRIAGE AND PARENTAGE AND THE SANITARY AND PHYSIOLOGICAL LAWS FOR THE PRODUCTION OF CHILDREN OF FINER HEALTH AND GREATER ABILITY. By a Physician and Sanitarian. New York: M. L. Holbrook & Co.

Books on this subject are too commonly written by "cranks," some vicious, some merely ignorant and carried away with fanciful theories. This volume is radically different; it is scientific, sober, clean, and worthy of conscientious consideration by every possible parent, particularly by the young.

THE WATCH AND CLOCKMAKER'S HAND BOOK. By F. J. Britten. London: W. Kent & Co.

A fourth edition of Mr. Britten's pamphlet substantially bound. It describes in a simple practical way the mechanism of timepieces, and the tools and processes employed by watch and clock makers and repairers.