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.

If your boiler foams, it is caused by impurities suspended upon the surface of the water. It is a foul proceeding, and can be entirely obviated by the Hotchkiss Mechanical Boiler Cleaner. 84 John St., New York.

We advise our readers to use Van Beil's "Rye and Rock" as a tonic.

Cook's Infusorial Earth. A superior quality. Apply to D. Judson Cook, Drakeville, Morris County, N. J.

Wanted—To trade territory of my patent Buggy Top for second-hand engine boiler and machinery. J. F. Fowler, Alliance, O.

Wanted—Small Distilling Apparatus. Baum, Four Mile, Catt. Co., N. Y.

Persons having Patented Specialties they want placed on the market, address "Agency," P.O.Box 985, Prov., R.I.

Pocket Cutlery Manufacturers send address to H. Rogers, Sabula, Iowa.

Electro Gold, Silver, and Nickel Plating, Buffing, and Polishing Iron, Steel, or Brass Goods. Careful estimates given to Manufacturers of Metal Goods. S. H. Cowles & Co., 137 Elm St., New York.

Light Tramway Locomotives for wood or iron rails. Steam Street Cars. W. A. Gilday, 54th St., Phil'a, Pa.

J.J.Callow's new grain'g and letter'g catal'g, Clevel'd, O

18 ft. Steam Yacht; also 2 H. P. Engine and Boiler. Geo. F. Shedd, Waltham, Mass.

Second-hand Engines, Boilers, and Machinery. Send for price list. D. Stevenson, Jr., Harrisburg, Pa.

Parties owning Patents relating to Light Hardware, that wish the goods manufactured in quantity, or have patterns made for same, will find it to their interest to address Geo. Van Sands, Lock Draw 132, Middletown, Ct.

Peck's Patent Drop Press. See adv., page 14.

Houghton's Boiler Compound contains nothing that can injure the iron, but it will remove scale and prevent its formation. Houghton & Co., 15 Hudson St., N. Y.

Tarred Roof'g, Sheath'g Felts. Wiskeman, Paterson, N.J.

Long & Allstatter Co.'s Power Punch. See adv., p. 13.

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.

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

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

List 26.—Description of 2,500 new and second-hand Machines, now ready for distribution. Send stamp for the same. S. C. Forsaith & Co., Manchester, N. H.

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

Punching Presses & Shears for Metal-workers, Power Drill Presses. $25 upward. Power & Foot Lathes. Low Prices. Peerless Punch & Shear Co., 115 S. Liberty St., N.Y.

"Rival" Steam Pumps for Hot or Cold Water; $32 and upward. The John H. McGowan Co., Cincinnati, O.

The Eureka Mower cuts a six foot swath easier than a side cut mower cuts four feet, and leaves the cut grass standing light and loose, curing in half the time. Send for circular. Eureka Mower Company, Towanda, Pa.

Saw Mill Machinery. Stearns Mfg. Co. See p. 13.

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

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

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

For Machinists' Tools, see Whitcomb's adv., p. 12.

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

National Steel Tube Cleaner for boiler tubes. Adjustable, durable. Chalmers-Spence Co., 10 Cortlandt St., N.Y.

Turbine Wheels; Mill Mach'y. O.J.Bollinger, York, Pa.

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., 531 Jefferson St., Philadelphia, Pa.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts. Importers Vienna lime, crocus, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

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

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 414.

Clark Rubber Wheels adv. See page 28.

For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling. see Frisbie's ad. p. 29.

Safety Boilers. See Harrison Boiler Works adv., p. 29.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423. Pottsville, Pa. See p. 29.

Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 28.

For Sequeira Water Meter, see adv. on page 30.

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

Brass & Copper in sheets, wire & blanks. See ad. p. 44.

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

Clark & Heald Machine Co. See adv., p. 413.

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 45.

Wren's Patent Grate Bar. See adv. page 45.

Machine Diamonds, 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.

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

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 45.

Houston's Sash Dovetailing Machine. See ad., p. 45.

Steam Engines; Eclipse Safety Sectional Boiler. Lambertville Iron Works. Lambertville, N. J. See ad. p. 28.

Pat. Steam Hoisting Mach'y. See illus. adv., p. 45.

New Economizer Portable Engine. See illus. adv. p. 46.

Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn.

Rue's New "Little Giant" Injector is much praised for its capacity, reliability, and long use without repairs. Rue Manufacturing Co., Philadelphia, Pa.

Rowland's Vertical Engine. Wearing parts of steel. Broad bearings. F.C.& A.E.Rowland, New Haven, Conn.

The Sweetland Chuck. See illus. adv., p. 46.

Wm. Sellers & Co., Phila., have introduced a new injector, worked by a single motion of a lever.

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. 46.

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

Use the Vacuum Oils. The best car, lubricating, engine, and cylinder oils made. Address Vacuum Oil Co., No. 3 Rochester Savings Bank, Rochester, N. Y.

Fire Brick, Tile, and Clay Retorts, all shapes. Borgner & O'Brien, M'f'rs, 23d St., above Race, Phila., Pa.

Lightning Screw Plates and Labor-saving Tools, p. 45.

Berryman Feed Water Heater. See illus. adv., p. 46.

NEW BOOKS AND PUBLICATIONS.

THE JOURNAL OF THE AMERICAN AGRICULTURAL ASSOCIATION. Vol. I. No. 1. 75 cents. Published by the Association. Jos. H. Reall, Secretary and Editor.

Contains the proceedings and papers of the national convention in this city in 1879, the proceedings of the meetings of December, 1880, and February, 1881, with some other special contributions on subjects related to agriculture.

THE ROCKY MOUNTAIN LOCUST. By C. V. Riley. Author's edition.

Comprises that portion of the second report of the U. S. Entomological Commission in which Professor Riley sets forth the permanent courses which the Government should adopt to lessen or avert locust injury. The descriptions of the geographical, topographical, and botanical characteristics of the several areas of mountain, plateau, plains, basins, etc., have a distinct value independent of the locust question.

STATISTICAL ABSTRACT OF THE UNITED STATES. Third number. Washington: Government Printing Office. 1881.

A collection of tables in regard to finance, coinage, commerce, immigration, tonnage, and navigation, education, postal service, population, public lands, railroads, agriculture, and mining of the United States in 1880, prepared under the direction of the Secretary of the Treasury.

ON ENSILAGE. By H. R. Stevens. Published by the author. 50 cents.

In this little book the proprietor of Echo Dale Farm, Dover, Mass., recounts his very satisfactory experience with silos, and adds the confirmatory experience of twenty-five other practical farmers as given in letters to him, describing their methods of storing and feeding ensilage, and their conclusions with respect to the economy of the new method of preserving forage.

RESOURCES OF SOUTH-WEST VIRGINIA. By C. R. Boyd, E.M. New York: John Wiley & Sons. 8vo, pp. 321.

Mr. Boyd reviews, county by county, the agricultural and mineral resources of fifteen or more of the south-western counties of Virginia, his purpose being to call attention to the advantages and opportunities which that part of Virginia offers to settlers and capitalists. The mineral deposits include iron, coal, zinc, copper, and lead. This region bids fair to become one of the richest and most desirable for residence in the United States.

IMAGINARY QUANTITIES: THEIR GEOMETRICAL INTERPRETATION. Translated from the French of M. Argand. By Professor A. S. Hardy. New York: D. Van Nostrand. 50 cents.

This is No. 52 of Van Nostrand's series of scientific reprints. The work of M. Argand is notable as having presented a pretty full discussion of the theory of imaginary quantities a quarter of a century before the idea was developed by Gauss, to whom the theory is commonly accredited.

INDUCTION COILS: HOW MADE AND HOW USED. New York: D. Van Nostrand. 50 cents.

No. 54 of Van Nostrand's science series. A reprint of the eighth English edition of Dyer's compact and generally admirable manual of experimental illustration of the nature and applications of intensity currents.

LEFFEL'S CONSTRUCTION OF MILL DAMS, AND BOOKWALTER'S MILLWRIGHT AND MECHANIC. Springfield, Ohio: James Leffel & Co. Pp. 283. 50 cents.

In this handbook the publishers have presented in convenient form the two well-known and very useful works named in the title. In the first part forty or more types of mill dams are illustrated by full page engravings.

A LECTURE ON THE PROGRESS OF THE NEW IMPROVED BED OF THE DANUBE AT VIENNA. By Sir Gustave Wex. Washington: Government Printing Office. 1881.

In this lecture the chief director of the improvement of the Danube at Vienna discusses not only the work but the lessons taught by it, and adds a description of the catastrophe produced by the ice gorge of 1880.

I COMPLETE COURSE IN GEOGRAPHY. By William Swinton. II. GRAMMAR SCHOOL GEOGRAPHY. By William Swinton. New York and Chicago: Ivison, Blakeman, Taylor & Co.

Mr. Swinton's "complete course" has been before the public for five or six years, and has won, by its practical merits, an exceptionally extensive use in common schools throughout the United States. The author's idea of the inseparableness of physical and political geography is the true one, and the prominence he gives to industrial and commercial interests is much to be commended. The maps are many and well suited to their purpose; and the numerous illustrations have evidently been inserted for purposes of instruction. The new grammar school geography is intended to mark a higher grade of school requirement, and does mark a higher if not the highest level of text book making. The book has manifestly been prepared without stint of labor or cost on the part of author and publishers, and shows throughout a clear appreciation of what is needed in the better class of schools. It is admirably adapted also for family use.

THE MERCANTILE REGISTER. Issued by McKillop, Walker & Co.: New York. 1881.

Contains a list of the banks and bankers of the United States and Canada with whom the publishers have business connection, and also a corresponding list of attorneys and their references; together with a summary of the collection laws of the different States and other information of value to merchants

The final issue of the *Harvard Register* comprises the numbers for April, May, June, and July, 1881. The *Register* has been discontinued to avoid possible competition with the official publication which the authorities of the University have decided to issue. The publisher and editor of the *Register*, Mr. Moses King, has made it a magazine of such superior quality that its ceasing to be is a loss that will be regretted by many besides the graduates of Harvard University.

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.

(1) J. M. B. asks: 1. What is papier mache and how is papiermache work made? Have been told that it is made from old postage stamps. A. Papier mache is made from paper pulp with sizing; sometimes clay, chalk, and pigments are added. 2. Is there any market to be found for old postage stamps? I have several thousand of them, and would like to find a market for them. A. See column of Business and Personal. A small advertisement inserted therein would probably put you in communication with dealers in such things.

(2) A. A. S. asks: Can you give me a reliable method of removing mildew from cotton goods of light texture, lawns, muslins, etc? A. 1. If the goods are colored soak them for twelve hours or more in sour milk, or buttermilk, then rinse in water, and wash in strong soap suds. 2. If the goods are uncolored moisten the spots repeatedly with javelle water diluted with three volumes of cold water; a brush can sometimes be used with advantage; rinse in plenty of running water, then wash in strong soap suds, not too hot.

(3) A. B. asks: If two slabs of inch glass be ground air tight and then an air chamber be sunk between them, would the suction be stronger if the air chamber were completely exhausted than if the chamber were not there? We think not, because the square inches of atmospheric pressure are the same whether the air chamber be there or not. A. Your opinion is correct.

(4) T. D. writes: I have occasion to buy large quantities of green oak staves, and have to have them piled in the yard for about a year before they are fit to work. They are exposed to all weathers. It is not desirable to use a kiln to dry them. Do you think they would dry quicker if piled under a shed, keeping the rain and sun off, but allowing the air to circulate freely through it, all the sides being open? A. Yes.

(5) C. S. B. & S. writes: We have been making a number of heavy steel dies for hammering purposes, and have had considerable trouble in hardening them. Have used prussiate of potash and also tried them thoroughly in charcoal fire without the potash, but have not been able to make them stand. By hard use they will sink in spots just as though they were soft, but a file will not touch even the sunken spots. It must be they do not harden through. A. Probably the trouble is due either to unequal heating or unequal exposure in hardening. The heating should be done in a "dead" fire, that is, not forced by a blast; and in hardening, great care should be used, by constant agitation, that all parts may be equally exposed to the hardening liquid. It is possible your steel may not be homogeneous.

(6) E. D. asks: What becomes of the air in a boiler when steam is generated? A. It escapes with the steam, either through the engine or safety valve, as either is taking the steam from the boiler. A good engineer, when getting up steam, leaves his safety valve open to allow the air to escape when the steam is first generated.

(7) J. Y. S. asks: Is it the weight of water or the pressure from the dam and creek that runs these old kind wooden water wheels. For example, I build a wheel 20 feet in diameter, and have a waterfall 10 feet high, a box 4 feet square inside, and a flume 10 feet long and 6 feet square: would I have the same power (that is, if I would keep this box and flume as above filled with water) as if I get it direct from the dam? A. It is the weight of water that gives the power. You would have the same power in either case if the water is kept at same height.

(8) P. R. S. writes: I have an upright tubular boiler, four years old; has been unused three years. I wish to use it, and would feel safer if it was tested. Now, if I fill it full of water, heat the water till the steam gauge marks 125 lb. (the boiler is 24 inches by 6 feet, iron $\frac{5}{8}$ inch thick, and tested 160 lb. when new), will it not be safe to make steam in it at 100 lb.? A. We would not advise over 80 lb. pressure. Your proposed mode of testing is dangerous, and should only be done by a very careful and competent engineer.

(9) W. M. M. asks: 1. Will an arrow shot perpendicularly into the air attain the same force or velocity in its descent as when it left the bow? A. No; the friction of the atmosphere both in the ascent and descent will reduce it. 2. Is there any rule to compute accurately the height to which an arrow has been shot if the time of its flight is known? A. We know of none.

(10) F. & C. write: I wish to construct a Faure secondary pile, and need a little more knowledge than is contained in No. 26. Are not the plates in Fig. 1, page 406, connected for a quantity current, and therefore not suitable for electro-motive use? A. They are connected for quantity, but a number of such elements may be joined for intensity. 2. Does it make any difference in charging the secondary pile whether it is connected for intensity or quantity current? A. In charging the elements should be connected for quantity. 3. Will a small magneto machine such as are used in telephone signaling, be powerful enough to charge properly? A. No; you should use two or three Bunsen elements. 4. Does the secondary pile give current of same tension until all is gone, or does it weaken at the last? A. The current gradually weakens from first to last, and of course much quicker on a circuit of low resistance than it does on a circuit having considerable resistance. 5. Are either Edison's or Swan's incandescent lamps in the market, or can they be procured? A. We believe they are not in the market yet.

(11) C. E. J. asks how to use a fast speed in reaming wagon boxes. A. You cannot use a fast speed if the boxes are hard, as they should be. A very openly grooved reamer with fine cutting edges will probably work best.

(12) A. W. G. asks how to make cement to mend a cut in the rubber tire of a bicycle. A. The rubber companies sell a cement for mending rubber. It is composed of a semi-liquid solution of gum caoutchouc in naphtha. The rubber is cut fine and digested with the naphtha, warmed, over a water bath (away from fire), with occasional agitation until it softens, swells up, and forms a smooth pasty mass. No more than is requisite should be used in the joint, and plenty of time should be allowed for the cement to get dry. See cements, SUPPLEMENT, No. 157.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

June 21, 1881,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for one dollar. In ordering please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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