

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.

Woodworking Mach'y. Bentel, Margedant & Co., p. 251. Lubricator. See advt., Detroit Lubricator Co., p. 252. Poet of Poets. Whoever is entitled to this distinction, there is no doubt that the Esterbrook Falcon No. 048 is the pen of pens.

Send for List No. 7 of over 2,000 different new and second-hand machines, to Rollstone Machine Company, 95 Liberty Street, New York.

Heliographic or Blue Process Paper to take copies of Drawings, at Keuffel & Esser, 127 Fulton St., New York.

Wanted.—Machine for glazing or polishing linen collars and cuffs. C. Phillips, 82 Mark Lane, London, E. C., England.

Engines, 10 to 50 horse power, complete, with governor, \$350 to \$550. Satisfaction guaranteed. Nearly seven hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinville, N. Y.

Pat's Mfg'd on royalty. A. B. McCool, Pottsville, Pa.

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

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

Gould & Eberhardt's Machinists' Tools. See adv., p. 254.

For Heavy Punches, etc., see illustrated advertisement of Hilles & Jones, on page 252.

Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 254.

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

Vertical Engines, varied capacity. See adv., p. 254.

Combined Concentric and Eccentric Universal and Independent Jaw Chucks. The Pratt & Whitney Co., Hartford, Conn.

For best low price Planer and Mather. 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 Sweetland Chuck. See illus. adv., p. 254.

Steam Pumps. See adv. Smith, Vaile & Co., p. 252.

The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Ave., Phil. Pa. Knives for Woodworking Machinery. Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.

Small articles in sheet or cast brass made on contract. Send models for estimates to H. C. Goodrich, 66 to 72 Ogden Place, Chicago, Ill. Mention this paper.

Calcium Light Apparatus and Stereopticons at low prices. C. Beseler, 218 Centre Street, New York.

Bostwick's Giant Riving Saw Machine, adv., page 238. For Mill Mach'y & Mill Furnishing, see illus. adv. p. 236.

See New American File Co.'s Advertisement, p. 238.

Woodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 238.

Wanted.—Liberal inducements and facilities for locating large iron works. Address Iron, Manchester, N. H. Schools Open.—Send for Catalogue of Drawing Materials. Keuffel & Esser, New York.

25' Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

50,000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Cope & Maxwell M'fg Co.'s Pump adv., page 220.

The Berryman Feed Water Heater and Purifier and Feed Pump. L. B. Davis' Patent. See illus. adv., p. 220.

For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 222. Red Jacket Adjustable Force Pump. See adv., p. 220.

Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 220. 4 to 40 H. P. Steam Engines. See adv. p. 220.

Collection of Ornaments.—A book containing over 1,000 different designs, such as Crests, Coats of Arms, Vignettes, Scrolls, Corners, etc., will be mailed free on receipt of \$1. Address Palm & Fechteler, 6 West 14th Street, New York.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 205.

Combination Roll and Rubber Co., 68 Warren street, N. Y. Wringer Rolls and Moulded Goods Specialties.

Pure Water furnished Cities, Paper Mills, Laundries, Steam Boilers, etc., by the Multifold System of the Newark Filtering Co., 17 Commerce St., Newark, N. J.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 30 to 38 Market St., Chicago, Ill.

First Class Engine Lathes, 30 inch swing, 8 foot bed, now ready. F. C. & A. E. Rowland, New Haven, Conn.

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3033, New York city.

Jas. F. Hotchkiss, 84 John St., N. Y.: Send me your free book entitled "How to Keep Boilers Clean," containing useful information for steam users & engineers. (Forward above by postal or letter; mention this paper.)

Steel Stamps and Pattern Letters. The best made. J. F. W. Dorman, 21 German St., Baltimore. Catalogue free.

For Power & Economy, Alcott's Turbine, Mt. Holly, N. J. Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other Can Tools. E. W. Bliss, Brooklyn, N. Y.

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.

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. Wood-Working Machinery of Improved Design and Workmanship. Cordesman, Egan & Co., Cincinnati, O.

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

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

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

NEW BOOKS AND PUBLICATIONS.

CHATTER BOX, JR.

This is a handsome quarto volume containing an uncommonly fine collection of pictures and verses for children, calculated to afford an endless variety of amusement for the youngsters. The typography is superior, the paper and binding strong. It is one of the best of juvenile books that has come under our notice. R. Worthington, publisher, 770 Broadway, New-York.

THE BOOK-KEEPER'S COMPANION. J. G. Beidleman, Philadelphia. Price 75 cents.

This little work, by Thomas A. Lyle, accountant, is intended for the guidance of students and inexperienced persons in opening a set of books and keeping accounts accurately.

LIGHT: A COURSE OF EXPERIMENTAL OPTICS, CHIEFLY WITH THE LANTERN. By Lewis Wright. London: Macmillan & Co.

The author has been very happy in his choice of experiments intended to develop the physical realities which underlie the phenomena of light and color, and has been quite as fortunate in having his efforts supported by his publishers. In addition to some two hundred engraved diagrams of experiments and apparatus are eight plain and colored plates finely illustrating polariscope objects, the spectrum and its teachings, interferences of polarized light, and the various actions of crystals upon direct and polarized light. These illustrations go a long way to replace the experiments for the general student, while they furnish many helpful suggestions to the teacher of experimental optics.

SCOTT-BROWNE'S TEXT BOOK OF PHONOGRAPHY. By Mr. and Mrs. D. L. Scott-Browne. New York: D. L. Scott-Browne.

The authors of this text book are widely known as successful teachers of phonography. Their experience and good judgment are manifest on every page, especially in the relative simplicity and writableness of the forms they use and the classification of these for easy learning.

A DICTIONARY OF ECONOMIC PLANTS. By John Smith. London: Macmillan & Co. \$3.50.

An enlargement and improved arrangement of the descriptive matter of the author's "Domestic Botany," published ten years ago. In this work the popular names of useful and ornamental plants are arranged alphabetically, followed by their systematic names and a compact statement of their history, products, characteristics, and uses. Mr. Smith's forty years of service as curator of the Royal Botanic Gardens, at Kew, have afforded him rare advantages for becoming practically acquainted with the plants which he describes. We have found the original work very handy and seldom disappointing as a book of reference, and can commend this improvement of it to all who have occasion to seek for general information respecting economic plants.

INDIANA: DEPARTMENT OF GEOLOGY AND NATURAL HISTORY. By John Callett, State Geologist, 1881. Indianapolis.

The newly established department for continuing the geological survey of Indiana is manifestly in good hands. This report is the first considerable attempt to illustrate the paleontology of the State, by the State. The new work covers the counties of Shelby, Fountain, Delaware, and Bartholomew. The report of our New York State Geologist, Professor James Hall, on the fossils of the Niagara group found at Waldron, Ind., is reproduced with thirty-two plates; seven plates give illustrations of some of the characteristic fossils of other formations, and there are twelve plates of fossil corals drawn and engraved by J. W. Van Cleave. The economic geology of Indiana is represented by about seventy quarries, mostly of limestone; some valuable beds of kaolin and coarser clays; and 216 coal mines. The development of the latter has only begun, yet Indiana ranks sixth in the list of coal producing States. The coal field covers nearly 7,000 square miles; a superior black coal prevails over an area of 600 square miles.

HAND BOOK OF THE ST. NICHOLAS AGASSIZ ASSOCIATION. By Harlan H. Ballard. Pittsfield, Mass.: The Author. 50 cents.

Two years ago the author suggested in *St. Nicholas* an extension of a society of young people which had been organized at Lennox, Mass., for the study of natural history, in imitation of the children's scientific societies of Switzerland. The suggestion took so well among the readers of *St. Nicholas* that something like three hundred chapters of the Agassiz Association have been started, their geographical range extending from England and Ireland to Texas, California, and Vancouver's Island. This little hand book tells how these societies are organized, and gives a good many practical hints with regard to the preservation of specimens, the purchase of young naturalists' supplies, etc. The spirit of the movement is excellent, and we should be glad to see a chapter established in every school district.

UNITED STATES COMMISSION OF FISH AND FISHERIES. Part VII. Reports of the Commission for 1879. Washington.

In addition to a review of the special work of the commission in 1879 are several valuable reports and communications, of which the more important are Professor Farlow's "Marine Algæ of New England," and Professor Verrell's report on the Cephalopods of the Northeastern coast of North America.

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) H. K. R. asks (1) what bruised Aleppo nutgalls are, and are they known by any other name. I find one of the ingredients in a receipt for ink in SUPPLEMENT, No. 157, and do not know the meaning of the expression. A. The galls referred to are blue or Aleppo nutgalls. They are excrescences due to insects found on certain varieties of quercus. When crushed (bruised) and digested with hot water they yield an extract containing a large per cent of tannin. 2. Can you refer me to some good work on electrotyping? A. See "Electrometallurgy," SUPPLEMENT, No. 310.

(2) J. C. H. asks how paper is prepared so that a brass pointer leaves a black mark on it. A. Dissolve a quarter of an ounce of pure sodium sulphide and half an ounce of sodium hyposulphite in a quart of rain water, filter the solution, and with it uniformly moisten the surface of the paper, then dry the latter under pressure between clean blotting paper.

(3) J. F. N. asks how gold and silver are refined at the U. S. Assay Office in New York, what kind of acid is used, and how is the silver precipitated? A. The bullion, after granulation, is boiled up with sulphuric acid, which dissolves the silver and leaves the gold behind. The silver is precipitated from this solution by strips of copper, which take its place in combination with the acid and produce blue vitriol, while the silver displaced is well washed and then melted into bars in the furnaces.

(4) I. S. asks: Will you please inform me how much salt and ice it will take to make a temperature of 22° Fah. A. Use ice and salt in the proportion of 12 of the former to 1 1/2 of the latter. The ice should be crushed and well mixed with the salt.

(5) E. T. P. writes: In a late issue of the SCIENTIFIC AMERICAN you gave a receipt for restoring rubber that had become hard and brittle, by means of the vapor arising from kerosene. I tried the experiment with a glass fruit jar, the rubber suspended just above the oil. For thirty days, could discover no change in the rubber, and then substituted benzine, where the rubber has now hung for one week, but as yet there is very little change. Can you tell me why the experiment is not successful? A. Heat the oil over a sand bath away from fire.

(6) J. J. R. writes: 1. In Notes and Queries of your issue of August 19, No. 9, R. D. asks about what is used for dark bronze; what kind of copper must be used, is it the metallic copper or the perchloride, same as the iron salt? A. It should read perchloride of iron and perchloride of copper. 2. After drying must this bronze be brushed or polished in some way to give it a glossy surface, and must it also be lacquered to keep so? A. It can be burnished with the burnishing tool or the rag buff. It stands exposure to the air very well, but retains the finish better if coated with a very thin clear lacquer of shellac in alcohol.

(7) C. W. asks: With what paint or material can I coat a water tank lined with sheet lead, so as to prevent the action of the water on the lead? A. Use pure asphaltum varnish. Give the surface two coats of this and let both dry thoroughly before water is allowed contact with them. After the first contact the coating will not materially affect the taste of the water.

(8) Miss M. C. asks (1) how coal oil is found. What does the earth look like? A. Consult "Coal and Coal Oil," and "Petrolia." Address for these and other books on the subject the booksellers who advertise in this paper. 2. If it should be near a well what would be the effect on the water? A. The water under such circumstances would be contaminated by the oil.

(9) A. D. C. asks for a recipe for mahogany stain to use on beech wood. A. A mixture of one part of glue, six of water, and sufficient brown oxide of iron to give the desired tint of color to a trial stick of wood, are mixed together by heat and stirring; more glue may be added if the coat is not sufficiently adhesive or rubs off; this is then, while hot, brushed over the article to be stained and well rubbed into the grain with a cloth. Two coats may be added if the wood is very porous or rough. The article, after drying, is then varnished over with a shellac varnish and polished when dry with a small quantity of linseed oil.

(10) W. B. N. asks: What are the ingredients of the soda dispensed from the soda fountains for drinking? A. The liquid is a solution, under pressure, in water of carbonic acid (gas). The gas is generated under considerable pressure in a closed vessel by the

action of diluted sulphuric acid upon marble dust or ground marble. It is passed over into the cold water which absorbs it. The names soda or soda water are misnomers, as the liquid contains no soda. It was so miscalled from an imagined resemblance between it and the older effervescent beverages prepared from bicarbonates of soda or potassa and vegetable acids or acid salts.

(11) A. O. writes: I bought last year several barrels of apple vinegar which is now old and strong enough for use, but we find it is made partly at least of rotten apples, which give it a peculiar unpleasant taste. Can you advise some remedy? A. We know of no practical way of effectually removing the taste. You might try the following, which will in any event improve the taste and appearance of the liquid: Scald out a clean cask, add to and stir up with the vinegar one pound of fine granular bone black and a quarter of a pound of bisulphite of lime, then the whites of three eggs. Let it stand twenty-four hours, and carefully rack off the clear vinegar from the sediment into the clean cask. This should be kept in as cool a place as possible.

(12) J. S. P. asks: 1. Please give a receipt for making soft solder such as the tops of canned goods are sealed up with. All that I can get is too hard, as it takes too much heat to open the cans. A. Melt together lead, 1 1/4 pounds; tin, 2 pounds, bismuth, 2 ounces. The lead should be melted first, the tin added next, and finally the bismuth stirred in well just before pouring. 2. Please give receipt for making ink for marking cotton bales, one not easily washed off by exposure or blurred by handling—a blue black. A. Dissolve about 6 ounces of asphaltum (genuine) in 1 1/2 pint of oil of turpentine; you can color with a sufficient quantity of lampblack or mineral black.

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

J. M.—It is muscovite and iron sulphide—pyrite.—J. W.—The specimen is quartz. It is of no value unless of exceptional quality and procurable in large quantity.

COMMUNICATIONS RECEIVED.

Relation of Proportions of Pyramid to its Circle. By W. F. Q. On Parhelia. By L. S.

[OFFICIAL.]

INDEX OF INVENTIONS

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

September 26, 1882.

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 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, 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.

Table listing various inventions and their patent numbers, including items like Addressing machine, Animal catcher, Annunciator, Axle tap wrench, Axle, vehicle, Ball, Banjo, Bar, Barrel making machine, Basket making machine, Bearing, anti-friction, Bed bottom, adjustable spring, Beehive, Beer, etc., apparatus for cooling, Bell, call, J. Y. Fairman, Bell, door, J. J. Johnston, Beverage, aerated tonic, Binder, automatic, Binder, self, Whiteley & Thomas, Bit, See Bridge bit, Block, See Printing block, Blower, fireplace, B. G. Covington, Boiler, See Wash boiler, Boiler furnace, M. S. Foote, Bookbinding, H. H. Hoffmann, Book-holder and arm rest combined, J. J. Armstrong, Jr., Bookmakers' table shears, gauge for, E. P. Donnell, Boot or shoe sole fastening, S. W. Robinson, Bottle packing box, E. L. Mueller, Bottle stopper, G. & H. E. G. Luyties, Box, See Bottle packing box, Egg box, Bracelet, A. Engelmann, Brake, See Car brake, Brick elevator, J. C. Bobzien, Brick machine, G. Davis, Bridges, guard gate for swing, J. Savanson, Bridle bit, E. R. & C. E. Cahoon, Broiler, A. H. Eke, Broom socket, A. S. Flint, Burial case corner, G. W. Comee, Burner, See Garbage burner, Buttons from plastic material, manufacture of, P. L. Sylvester, Cable traction, O. H. Jadwin, Can filling apparatus, R. C. Anderson, Cant-dog, W. Peabody, Car brake, Widdield & Button, Car brake, electric, P. V. Conover, Car coupling, K. S. Blanchard, Car coupling, D. Carrough, Car coupling, J. E. H. Chapman, Car coupling, D. W. Deal, Car coupling, D. W. Glidden, Car coupling, H. E. Hawk