

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.

See Baker's Telephone adv., p. 44, last number. The Berryman Feed Water Heater and Purifier and Feed Pump. I. B. Davis' Patent. See illus. adv., p. 44. Light and Fine Machinery and Tools to Order. Lathe catalogue for stamp. E. O. Chase, Newark, N. J. Manufacturers of Drain Tile Machinery will please send address to C. G. Metzler, Columbus, Kan. For Machinists and Apprentices.—The Student's Illustrated Guide to Practical Draughting. Sent on receipt of \$1. T. P. Pemberton, 142 Greenwich St., P. O. Box 3083, N. Y. Our goods speak for themselves, and a trial will convince the most skeptical of their superiority over all others. Lehigh Valley Emery Wheel Co., Lehigh, Pa. Wanted.—A Second-hand Bicycle, about 46 in. wheel. Address, with price, Box 31, Phoenix, Arizona. Caution to Manufacturers and Others.—The attention of those interested is called to the fact that materials for covering hot air and steam pipes, boilers, etc., which purport to contain asbestos, should bear the name of H. W. Johns, 87 Maiden Lane, N. Y., who is the inventor and patentee of genuine asbestos materials, comprising paints, roofing, steam packing, millboard sheathings, etc. Chemist's Pocket Book.—For Chemical Manufacturers, Metallurgists, Dyers, Distillers, Brewers, Sugar Refiners, Photographers, etc. By Thomas Bayley. \$2, mail free. E. & F. N. Spon, 44 Broome St., New York. Patent Wanted.—I want to buy whole or part interest, or manufacture on royalty. Address H. C. Lyon, New York. Manufacturers, Steam Boiler Owners, Towns and Cities desiring pure water, send for circular to the Newark Filtering Co., Newark, N. J. For Sale Cheap—6 Lathes, 2 Planers, 5 Upright Drills, 1 Fowler Press. All on hand. York & Smith, Clevel'd, O. Malleable and Gray Iron Castings to order, by Capital City Malleable Iron Co., Albany, N. Y. Electric Lights.—Thomson Houston System of the Arc type. Estimates given and contracts made. 631 Arch, Phil. 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. Lightning Screw Plates and Labor-saving Tools, p. 30. Send for Pamphlet of Compilation of Tests of Turbine Water Wheels. Barber, Keiser & Co., Allentown, Pa. List of Machinists in United States and Canada, just compiled: price, \$10. A. C. Farley & Co., Philadelphia. 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. The Medart Pat. Wrought Rim Pulley. See adv., p. 44. Abbe Bolt Forging Machines and Palmer Power Hammers a specialty. S. C. Forsaith & Co., Manchester, N. H. For Belt Studs, Belt Hooks, Belt Couplers, Belt Punches, Baxter Wrenches, write Greene, Tweed & Co., N. Y. The Sweetland Chuck. See illus. adv., p. 450. "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. 4 to 40 H. P. Steam Engines. See adv. p. 382. 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. Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 12. Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa. See Bentel, Mergedant & Co.'s adv., page 46. Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa. Presses & Dies, Ferracute Mach. Co., Bridgeton, N. J. Corrugated Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsbg., Pa. Presses, Dies, Tools for working Sheet Metals, etc. Fruit and other 'can' Tools. E. W. Bliss, Brooklyn, N. Y. Cope & Maxwell M'fg Co.'s Pump adv., page 45. C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 412. Saw Mill Machinery. Stearns Mfg. Co. See p. 29. 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. Supplee Steam Engine. See adv. p. 30. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Solomon's Parallel Vise. Taylor, Stiles & Co., Riegelsville, N. J. Peck's Patent Drop Press. See adv., page 30. Diamond Tools. J. Dickinson, 64 Nassau St., N. Y. Steam Hammers, Improved Hydraulic Jacks and Tube Expanders. R. Dudgeon, 24 Columbia St., 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. Telegraph, Telephone, Elec. Light Supplies. See p. 46. For Pat. Safety Elevators, Hoisting Engines, Friction Clutch Pulleys, Cut-off Coupling, see Frisbie's ad. p. 45. Eagle Anvils, 10 cents per pound. Fully warranted. Peerless Colors for Mortar. French, Richards & Co., 410 (allowhill) St., Philadelphia, Pa. Gear Wheels for Models (list free); Experimental Work, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa. Gould & Eberhardt's Machinists' Tools. See adv., p. 45. Elevators, Freight and Passenger, Shafting, Pulleys and Hangers. I. S. Graves & Son, Rochester, N. Y. For Leather, Rubber, or Cotton Belting, Linen Hose or Rubber Hose, write Greene, Tweed & Co., N. Y. Safety Boilers. See Harrison Boiler Works adv., p. 44.

Engines, 10 to 50 H. P., \$250 to \$500. See adv., p. 46. Metallic Letters and Figures to put on Foundry Patterns, all sizes. H. W. Knight, Seneca Falls, N. Y. Pays well on small investment.—Stereopticons, Magic Lanterns, and Views illustrating every subject for public exhibitions. Lanterns for colleges, Sunday schools, and home amusement. 116 page illustrated catalogue free. McAllister, Manufacturing Optician, 49 Nassau St., N. Y. Barrel, Key, Hoghead, Stave Mach'y. See adv. p. 45. Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p. 45. 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 best low price Planer and Mather, and latest improved Sash, Door, and Blin' Machinery, Send for catalogue to Rowley & Hiernance, Williamsport, Pa. Improved Skinner Portable Engines. Erie, Pa. The Porter-Allen High Speed Steam Engine. Southwork Foundry & Mach. Co., 430 Washington Av., Phila. P. 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. Ore Breaker, Crusher, and Pulverizer. Smaller sizes run by horse power. See p. 45. Totten & Co., Pittsburg. Portable Punch Drills. See Stow Shaft adv., p. 45. For Heavy Powers, etc., see illustrated advertisement of Hillis & Jones, on page 46.

NEW BOOKS AND PUBLICATIONS.

SECOND ANNUAL REPORT OF THE STATE BOARD OF HEALTH, LUNACY, AND CHARITY OF MASSACHUSETTS. 1880. Supplement containing Report and Papers on Public Health. Boston. 1881. The general report is brief, the bulk of the volume being given to special papers on the Pollution of Deerfield River and Miller's River; the Separate System of Sewage; Intermittent Fever in Massachusetts; School, house Sanitation; and the Health of Towns, with special reference to the Epidemic at Adams and the Sanitary Condition of Holyoke.

MECHANICAL INDUSTRIES EXPLAINED. By Alexander Watt. Edinburgh: W. & A. K. Johnston. A scrappy sort of book for "the rising youth of both sexes," describing briefly a number of industrial processes, chiefly mechanical. The information is good so far as it goes, but the author's style, though less technical than in his "chemical industries," is not particularly well suited for juvenile reading.

DANGERS TO HEALTH: A PICTORIAL GUIDE TO DOMESTIC SANITARY DEFECTS. By T. Pridgin Teale. Philadelphia: Presley Blakiston. A model book for its purpose. Indeed it is safe to say that an hour's study of its impressive and readily understood illustrations of sanitary defects in house drains, sewer connections, and the rest, will do more to open the eyes of householders, plumbers, and builders, to dangers to health through dishonest and ignorant work in sanitary appliances, than months of study of ordinary treatises on sanitary engineering and domestic economy. It is a book worthy of the widest circulation.

PRACTICAL LESSONS IN ARCHITECTURAL DRAWING. 33 full page plates and 33 woodcuts. By Wm. B. Tuthill. New York: William T. Comstock. Assuming some knowledge of architectural drawing on the part of the learner, the author shows, by examples in several classes of construction, how to make working drawings and write the specifications for buildings. The examples give plans, elevations, sections, and details of frame, brick, and stone buildings.

A NEW SYSTEM OF VENTILATION. By Henry A. Gouge. New York: D. Van Nostrand. Describes the principles, methods, and results of Gouge's system of ventilation, and contains a large amount of useful information and suggestion touching the necessity of ventilation and the vital value of fresh air.

PRESIDENT GARFIELD AND EDUCATION. HIRAM COLLEGE MEMORIAL. By B. A. Hinsdale, President Hiram College. Boston: James R. Osgood & Co. A memorial volume of special interest to those who knew Mr. Garfield as schoolmate, teacher, and townsman.

THE OPEN FIRE PLACE IN ALL AGES. By J. Pickering Putnam. Boston: James R. Osgood & Co. Quarto, cloth. \$4. An enlarged and very handsome edition of Mr. Putnam's volume published last year. The illustrations have been increased to over 300, comprising many contributions of specially fine and artistic work by modern architects as well as selections from the best work of earlier builders.

STEAM HEATING FOR BUILDINGS, OR HINTS TO STEAM FITTERS. By William J. Baldwin. New York: John Wiley & Sons. A straightforward, plain, and practical handbook for the young steam fitter.

THE IRONMONGER'S DIARY AND TEXT BOOK FOR 1882. London: Office of the Ironmonger. The fourteenth issue of the diary carries, in addition to its record pages and usual freight of advertisements, a summary of the British census of last year and an illustrated review (not altogether impartial) of some of the prominent systems of electric lighting.

THE PHOTOGRAPHIC AMATEUR. By J. Traill Taylor. New York: Scoville Manufacturing Company. The author's editorial experience in connection with publications devoted to photography has been of ser-

vice in the preparation of this manual. He tells what he has to say with commendable directness, and in terms which the amateur student of the art cannot fail to readily understand. Special attention is given to dry plate photography.

EL MAL DEL PINTO. Por Gustavo Ruiz y Sandoval, Medico de la Escuela de Mexico. Mexico. 1881.

In this very important contribution to medical science, which has been honored by a prize from the Mexican Academy of Medicine, the author gives a very exhaustive study of a peculiar skin disease, which, although usually regarded as confined to Mexico, is here stated to be also prevalent in several parts of Central and South America. The disease (mal del pinto, or "blue stain," as it has been called in English) is a contagious one, and manifests itself in the form of white, blue, or red patches on the feet, hands, and face, forming painful ulcerations, and giving the patient, as we should judge from the colored plates accompanying the memoir, a very unsightly appearance. In the more advanced stages the affection is accompanied by a sickening odor, the digestive faculty becomes impaired, the patient loses flesh and strength, and betakes himself to his bed, not to sleep, however, for extreme wakefulness is one of the symptoms of this stage. The cause of the endemic has not hitherto been well understood, but Dr. Ruiz in the work before us shows pretty conclusively from his microscopic examinations that it belongs to the category of zymotic diseases, and is produced by a fungus which he names microsporium hidalgocense. The affection appears to have no limit to its duration, and is cured only after long treatment by internal and topical remedies, leaving its traces then in the form of whitish cicatrices. As a prophylactic the doctor recommends that greater attention be paid to matters of cleanliness, public and private, and that certain forms of vegetable food, such as maize (which he believes harbors the fungus), should be strictly avoided. The memoir is finely illustrated, and is accompanied by a map showing the zone occupied by the disease.

BOLETIN DE LA SOCIEDAD DE GEOGRAFIA Y ESTADISTICA. Mexico. 1881.

The number before us of the Mexican Geographical Society's Bulletin, comprising parts 7, 8, 9, 10, and 11 of vol. v., contains several papers of more than ordinary value and interest, chief among which may be mentioned an important archaeological memoir by Sr. Jose Ma. Reyes, wherein is traced the history of the immigration of the Pueblos to the American continent, and especially to the territory now occupied by the Republic of Mexico. The paper is well illustrated, and gives evidence of great painstaking research on the part of its author. The other papers are: "A Synoptical View of the State of San Luis Potosi," with various historical, geographical, statistical, and governmental data, by Sr. Rafael del Castillo; and an elaborate "History of the Beneficiary Institutions in Mexico," by Sr. Juan de D. Peza.

THE AMERICAN CHEMICAL JOURNAL. Edited by Professor Ira Remsen, of the Johns Hopkins University, Baltimore.

This ably-conducted journal, now in its third volume, has occupied a prominent place in the serial literature of chemistry from its very beginning. Each number contains original articles by prominent American and foreign chemists, reviews of works relating to chemical science, reports of progress in the various departments of chemistry, and items of general interest to chemists. The journal is a model of typographical excellence, and is published in numbers of from 64 to 80 pages, six numbers forming a volume, at the subscription price of \$3.

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) E. C. B. asks: 1. Can I put anything on wood to prevent it from becoming water soaked without changing the natural color of the wood more than varnish would? If so, what and how done? A. You can try the following process: Digest the wood for twenty-four hours or more in a hot solution composed of 1 pound of soap (white soap) dissolved in 4 gallons of soft water, and then for several hours in a solution of 2½ pounds of alum in 2 gallons of water. Finally rinse in running water and dry. 2. If I boil articles made of wood in linseed oil can I put a finish on it, or will the oil prevent me? A. You may encounter some difficulty in polishing wood that has been boiled in oil as proposed. (2) J. C. S. writes: Will you please give me your opinion in regard to this new preservative "ozone," advertised in the papers? A. See answer to F. W., Jr., page 425 (36), volumexlv.

(3) W. St. asks: Is there any apparatus by which pieces of mineral or other substance of pea size can be heated by a continuous stream of hot air from 320° to 350° Fah.? A. An apparatus for heating and employing hot air in the way proposed could be constructed without difficulty. It might resemble in some respects that employed in heating air for "hot blast" iron smelting furnaces. We think of no similar apparatus in use.

(4) E. C. B. asks: Please give me the cheapest process of japanning or blacking coppered wire like inclosed sample that has been injured by exposure. Can it be done by dipping, and without heating in an oven? A. The wire can be japanned in the way you propose. See "Japanning and Japans," in SUPPLEMENT, No. 316.

(5) S. P. C. asks: Will you please state the difference, if any, between "galvanized," "marblized," and "granite" ware? Are these safe and wholesome to be used for cooking purposes? A. Galvanized iron, so-called, is iron that has been coated with zinc by immersing the clear iron in the melted zinc. "Marblized" and "granite" are technical names given to an iron ware that has been coated with a vitrified porcelain-like composition of certain earthy silicates—the vitrification being accomplished by heating the coated articles in a muffle furnace or kiln. These latter wares are, as now manufactured, unobjectionable. The galvanized ware is not fit for culinary purposes.

(6) R. A. C. asks: Has double refraction, as exhibited by Iceland spar, ever been explained? I am unable to find the explanation in any of the treatises on optics which I have seen. I can explain and demonstrate it in several ways. A. The cause of double refraction is not a mystery. You will find the matter explained on page 325, vol. xiv., "The Nature, Formation, and Uses of the Nicol Prism."

(7) S. E. W. writes: I am running a circular saw mill with 22 horse power engine, 14 inches stroke making 166 revolutions per minute. Would like to obtain more power by increasing size of pulley on mandrel, and speeding up engine sufficiently to keep up same relative speed of saw. Can I with safety increase speed of engine 20 to 25 revolutions per minute? Have already increased speed of engine about 20 revolutions, and would like to add about 20 to 25 more, making in all about 180 revolutions. A. Yes, if well balanced, and fly wheel not too large.

(8) L. D. writes: We have a boiler, 6 feet diameter, 12 feet long, with 132 3-inch flues; the grate surface is 4 feet long by 4 feet 6 inches wide, and 22 inches from boiler; bridge wall 12 inches from boiler; rear or back wall is 14 inches from end of boiler. We have a brick chimney, 85 feet high by 40 inches square inside, in which is a damper 24 feet up from floor, or about 10 feet above bridging, which we can close to any desired opening. Now, if we burn coal we burn about 5,500 lb. per day, and then we use only about one-third of the power of engine; if we burn shavings from planing machines and sawdust from our factory, which is a sash, door, and blind factory, and a general woodworker, we can keep steam easier. Our fireman some way or another left the front doors open, and found the steam go up in hurry; he then fired a while that way, and found that he would burn a good deal less fuel by leaving the furnace doors open. He then told me about it, and I examined it and found it as he stated. Our engine is 20x30 slide valve; the air holes below grates are two, 1¼x18 each. Now please tell us what is wrong. A. There is nothing particularly wrong, though we think you would do better with either wood shavings or coal by reducing the throat of the flue at the back end of the boiler from 12 inches height to 8 inches. You do not get air enough to the gases of your fuel. Put a lining plate to your furnace door; then drill in the door about eight holes, 1 inch diameter, and thimeling with as many five-sixteenths inch or three-eighths inch holes as you can well put in. It will not then be necessary to leave the door open.

(9) D. D. D. writes: I am sinking a shaft through rock prospecting, and the water bothers me a great deal coming up through the holes we bore to blast with. Will you please inform me through your paper some cheap method of blasting so the water would not trouble? Can you inform me where I can get glycerine cartridges? A. Cartridges of dynamite or nitro-glycerine are waterproof, and are generally employed for such purposes. See our advertising columns for addresses of manufacturers of these explosives.

(10) J. M. writes: 1. By putting iron and copper in contact, and allowing these metals to remain so, what effect would be produced on each? Would either corrode sooner, or otherwise? A. Under such conditions, if exposed to moisture, the metals form a galvanic pair, and the copper would in a measure be protected from corrosion at the expense of the iron; in other words, the iron would corrode faster than if not in contact with the copper. 2. In the event of zinc intervening would there be any change in the result? A. The zinc being the more positive of the series would be more rapidly oxidized, the other metals being to a certain extent protected thereby.

(11) J. J. writes: Turtles may be kept for four or five months headed in a cask three parts filled with salt water if the bung is left out. About a quarter of the salt water should be drawn off and replaced by fresh salt water once every month or two, if in the tropics. One which was treated in this way in a 250-gallon cask was pronounced by a turtle dealer in London to be as fine and fat a turtle as he had ever seen. It realized one shilling and two pence per pound live weight.

(12) C. H. L. asks: 1. What oil or substance could I use to mix with asphalt (Trinidad) to make a paint to be used cold, which could dry or evaporate, leaving the asphalt in nearly its natural state, so it would not run or soften under influence of sun's rays? Naphtha and turpentine are not satisfactory. Would resin oil answer? Am not familiar with its qualities. A. Common asphaltum contains moisture and volatile substances which must be eliminated before a good paint or varnish can be prepared with it. For the preparation of such a varnish see answer to E. H. L., page

