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 vublication office as early as Thursday morning to appear in next issue. The publishers of this paper guarantee to advertisers a circulation of not less than 50,000 copies every weekly issue

Chard's Extra Heavy Machinery Oil.

314

Chard's Anti-Corrosive Cylinder Oil.

Chard's Patent Lubricene and Gear Grease.

R. J.Chard, Sole Proprietor, 6 Burling Slip, New York, Loud Speaking Telephones, \$5 a pair. Illus. circulars or stamp. Agentswanted. Wm.R. Brooks, Phelps, N.Y.

Price Focus Gas Burner (50 per cent more light from same amount gas), 30 cts. Mailed everywhere. J. Red ington, 27 l'ark Place, New York.

Downer's Cleaning and Polishing Oil for bright metals is the oldest and best in the market. Highly recommended by the New York, Boston, and other Fire Departments throughout the country. For quickness of cleaning and luster produced it has no equal. Sample five galion can be sent C. O. D. for \$8. A. H. Downer, 17 Peck Slip, New York.

Now is the time to paint your roofs. The genuine Asbestos Roof Paints have proven the best and most economical protective coating for tin roofs, iron work, exposed brick walls, etc. Send for samples. H. W. Johns M'f'g Co., 87 Maiden Lane, sole manufacturers.

Wanted-A First-class, Second-hand Planer, 42' x 42", to plane 16' to 18'. Give full description. Noble & Hall, Erie, Pa.

Wanted-Live Manufacturing Company to Manufac ture my Patent Thread Case in the United States on Royalty. Address E. L. Fitch, 1417 Locust St., Des Moines, Iowa.

Wood Working Machinery of Improved Design and Workmanship, Cordesman, Egan & Co., Cincinnati, O. The great advantage of the genuine Asbestos Cover-

ings for Steam Pipes, Boilers, etc., over any other forms of non-conducting coverings, aside from their superior effectiveness and fireproof qualities, is that they are manufactured in convenient form, ready for use, and can be easily applied without the ald of skilled labor. The H. W. Johns M'f'g $C_{0.,87}$ Maiden Lane, New York, are the patentees and sole manufacturers.

- Allinfringements will be prosecuted to the full extent of the law.

We unhesitatingly pronounce Messrs. Boomer & Boschert's Cider Press the best one in daily use at Am. Inst. Fair. New York Office, 15 Park Row.

Rubber Hose and Linen Hose; all sizes in stock and to order. Greene, Tweed & Co., 113 Chambers St., N. Y.

Pays well on small investments.-Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions and parlor entertainments. Send stamp for 116 page catalogue to Mc-Allister, M'f'g.Optician, 49 Nassau St., New York. Contractors Supplies Co. Firsthands. 8 Liberty St., N.Y.

Metal Pattern Letters for Foundrymen. at reduced rates, manuf'd by H. W. Knight, Seneca Falls, N. Y.

Jenkins' Patent Gauge Lock; best in use. Illustrated circular free. A. W. Cadman & Co., Pittsburg, Pa.

Mr. Ely, of Afton, N. J., cut thirteen acres of heavy Brass & Copper in sheets, wire & blanks. See ad. p. 300. grass in five hours, July 2, with the Eureka Mowing Machine. It is the best mower made. Farmers send for illustrated circular to Eureka Mower Co., Towanda, Pa.

Parties desirous of contracting for the construction Wells of extra large capacity, may address P. O. Box 1150, New Haven, Conn.

For Sale, on account of increase of power, one 20 x 48 Corliss Engine, with three boilers and equipment complete. Now in use, but deliverable in November next. For particulars address Natchez Cotton Mills Company, Natchez, Miss.

The E. Stebbins Manuf'g Co. (Brightwood, P. O.), Springfield, Mass. are prepared to furnish all kinds of Brass and Composition Castings at short notice; also Babbit Metal. The quality of the work is what has given this foundry its high reputation. All work guaranteed.

Saw Mill Machinery. Stears Mfg. Co. See p. 269. Nickel Anodes, Nickel Salts, Pumice Stone, Rouge,

& Composition for Polishers. Greene, Tweed & Co., N.Y. The "1880" Lace Cutter by mail for 50 cts.; discount

to the trade. Sterling Elliott, 262 Dover St., Boston, Mass. The Tools, Fixtures, and Patterns of the Taunton Foundry and Machine Company for sale, by the George Place Machinery Agency, 121 Chambers St., New York.

Improved Rock Drills and Air Compressors. Illus trated catalogues and information gladly furnished, Address Ingersoll Rock Drill Co., 1% Park Place, N. Y.

Collection of Ornaments.-- A book containing over 1,000 different designs, such as crests, coats of arms, vignettes, scrolls, corners, borders, etc., sent on receipt of \$2. Palm & Fechteler, 403 Broadway, New York city.

Park Benjamin's Expert Office, 50 Astor House, N. Y. For the best Stave, Barrel, Keg, and Hogshead Machinery, address H. A. Crossley, Cleveland, Ohio.

able, durable. Chalmers-Spence Co., 40 John St., N. Y. The Brown Automatic Cut-off Engine; unexcelled for workmanship, economy, and durability. Write for information. C. H. Brown & Co., Fitchburg, Mass.

For Sale, ready for instant delivery, 16" x 42" Corliss Beam Engine, 16' x 2' wheel, thorough repair. Price, f. o. b. at tide water, in New England, \$1,250. S. C. Forsaith & Co., Manchester, N. H.

Avenue, Philadelphia, Pa. Light and Fine Machinery to order. Foot Lathe cata-

logue for stamp. Chase & Woodman, Newark, N. J.

Best Oak Tanned Leather Belting. Win. F. Forepaugh, Jr., & Bros., 531 Jefferson St., Philadelphia, Pa. Stave, Barrel, Keg, and Hogshead Machinery a spe

cialty, by E. & B. Holmes. Buffalo, N. Y. Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting

Works, Drinker St., Philadelphia, Pa. For Patent Shapers and Planers, see ills. adv. p. 284. Nickel Plating .--- Sole manufacturers cast nickel an-

odes, pure nickel salts, importers Vienna lune, crocus etc. Condit. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York. Presses. Dies. and Tools for working Sheet Metal. etc.

Fruit & other can tools. Bliss & Williams, B'klyn. N. Y.

Buffing Machinery. Patent Punches, Shears, etc. E. Lyon & Co., 470Grand St., Ngw York. Sheet Metal Presses, Ferracute Co., Bridgeton, N. J.

Wright's Patent Steam Engine, with automatic cut Wright, Manufacturer, Newburgh, N. Y.

H. A. Lee's Moulding Machines, Worcester, Mass.

National Institute of Steam and Mechanical Engineering, Bridgeport, Conn. Blast Furnace Construction and Management. The metallurgy of iron and steel. Practical Instruction in Steam Engineering, and a good situation when competent. Send for pamphlet.

Reed's Sectional Covering for steam surfaces; any one can apply it; can be removed and replaced without injury. J. A. Locke, Agt., 32 Cortlandt St., N. Y.

For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Puileys, Cut-off Coupling, see Frisbie's ad. p. 284. For Mill Mach'y & Mill Furnishing. see illus. adv. p.284. C. B. Rogers & Co., Norwich, Conn., Wood Working

Machinery of every kind. See adv., page 284. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423, Pottsville, Pa. See p.284.

For Separators, Farm & Vertical Engines, see adv.p.220. Steam Engines, Boilers, Portable Railroads, Sugar Mills. Atlantic Steam Engine Works, Brooklyn, N. V.

Apply to J. H. Blaisdell for all kinds of Wood and Iron Working Machinery. 107 Liberty St., New York. Send for Illustrated catalogue.

Air Compressors. Clayton Stm. PumpW'ks, Bk'lyn, N.Y. 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.

The Improved Hydraulic Jacks. Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York. For Superior Steam Heat. Appar., see adv., page 301.

Gear Wheels for Models (list free); experimental and model work, dies and punches, metal cutting, manufacturing, etc. D. Gilbert & Son, 212 Chester St., Phila., Pa Rollstone Mac. Co.'s Wood Working Mach'y ad. p. 301. The best Truss ever used. Send for descriptive circularto N. Y. Elastic Truss Co., 683 Broadway, New York. Houston's Four-Sided Moulder. See adv., page 301. Steam Engiues; Eclipse Safety Sectional Boiler. Lambertville Iron Works. Lambertville, N. J. See ad. p. 141. New Economizer Portable Engine. See illus. adv. p. 301. 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.

Ore Breaker, Crusher, and Pulverizer. Smaller size run by horse power. See p. 301. Totten & Co., Pittsburg. Machine Knives for Wood-working Machinery, Book Binders, and Paper Mills. Also manufacturers of Soloman's Parallel Vise, Taylor, Stiles & Co., Riegelsville, N.J.

Vacuum Cylinder Oils. See adv., page 301.

NEW BOOKS AND PUBLICATIONS.

ANALES DEL MINISTERIO DE FOMEN'IO DE LA REPUBLICA MEXICANA. Tomo iii. Mexico, 1880.

The beautifully printed, large octavo volume of 500 Packing once tried always used. Phœnix Packing pages before us, forms the second part of the third from 1-16 up in spools or on colls. Phœnix Packing volume of the Annals of the Minister of Public Works, Company, 108 Liberty st., N. Y. officials in charge of different departments of national scientific work. About one-third of the volume is devoted to reports of the scientists who were appointed to co-operate with Captain Shufeldt IL S. N. in his reconnoissance of the Isthmus of Tehuantepec to ascertain the feasibility of constructing across it an interoceanic canal, and gives a narrative of the expedition. an account of the geology and flora of the Isthmus, the astronomical and topographical operations, and a discussion of the probabilities as to the construction of the canal there; the reports being illustrated with numerous topographical and geological maps and sketches. The other papers are: A report of the Engineer of Minesonan alleged deposit of tin in the State of Guerrero; an exhaustive report of the same official THE AMERICAN SYSTEM—LATIN CHARTS on the mines of Guadalesgar, in the State of San Luis A WITH TEXT. By C. C. Schaeffer. Phi-ladelphia: Charles Brothers & Co. Potosi; a voluminous memoir by the Director of the National Astronomical Observatory of Chapultepec

showing the scientific work accomplished in that insti-

tution from its inception in 1878 up to December. 1879;

and a report of the Engineer of Mines on the results of

Recipes and Information on all Industrial Processes. siderable scientific interest, and is in every way highly creditable to the government officials of our neighbor ing republic, who are encouraging and vigorously pushing forward these valuable researches.

National Steel Tube Cleaner for boiler tubes. Adjust- MANUAL OF CATTLE-FEEDING. By Henry P. Armsoy, Wiley & Co. Armsby, Ph.D. New York: John

A treatise on animal nutrition and the chemistry of food-stuffs in their application to the feeding of farm animals. The work is based on the researches of Wolff Kiihn. and other recent German investigators; and is intended oot only to give such practical information as to economical stock feeding as may be of value to Gun Powder Pile Drivers. Thos. Shaw, 915 Ridge American farmers, but also such scientific instruction as shall enable the intelligent student to make good use of the results of new investigations.

> THE PRINCIPLES OF THERMODYNAMICS, WITH SPECIAL APPLICATIONS TO HOT AIR, GAS, AND STEAM ENGINES. By Robert Röntgen. Translated and enlarged by A. Jay Du Bois, Ph.D. New York: John Wiley & Son.

In using the work of Röntgen iu his classes in the Sheffield Scientific School of Yale College, Professor Du Bois has had occasion to supplement it with matter drawn from other sources. Among these additions, which appear in this volume, are two lectures by Professor E. Verdetupon the Mechanical Theory of Heat, an abstract of Pernolet's work on Air Compressors and Compressed Air Engines, and Zeuner's Theory of Superheated Steam.

Hydraulic Jacks, Presses and Pumps. Polishing and HYGIENE AND TREATMENT OF CATARRH. Buffing Machinery. Patent Punches, Shears, etc. E. By Thomas F. Rumbold, M.D. St.

Louis: Geo. O. Rumbold & Co. Sets forth in a plain and practical way such hygienic and sanative measures for the prevention and cure of The best engine made. For prices, address William chronic catarrhal inflammation of the nose, throat, and ears as the author's professional experience has proved to be beneficial to his patients. Much space is given to the influence of tobacco in predisposing to catarrhal diseases and preventing the cure of such complaints.

THE AUTHORSHIP OF THE FOURTH GOSPEL: EXTERNAL EVIDENCES. By Ezra Abbot,

D.D., LL.D. Boston: Geo. H. Ellis. Reproduces in convenient form the series of articles

on this subject in the Unitarian Review of February, March, and June, 1880.

AMERICAN NEWSPAPER DIRECTORY, 1880. New York. George P. Rowell & Co.

From this directory it appears that there are pub. lished in the United States and British America, 10,287 periodicals, divided as follows: Daily, 904; tri-weekly, 69; semi-weekly, 147; weekly, 7,997; bi-weekly, 46; semi-monthly, 129; monthly, 921; bi-monthly, 17; quarterly, 57.

the Transactions of the Medical Society • of New Jersey.

Describes the physiological conditions which should govern the construction of mechanical devices for the treatments of weak ankles, inverted feet, and the common forms of club foot.

LIGHT AND HEAT. THE MANIFESTATIONS IN NATURE. By Captain W. Sedgwick, R.E. London: C. F. Hodgson & Co.

On the basis of two or three simple observations, the duced by the internal reflection of the planet in the body meaning of which he misunderstands, Captain Sedg- or the glass. wick tries to make out that light and heat are the two all-controlling opposite forces in nature.

CIRCULAR NO. 3. BUREAU OF EDUCATION, Washington: Government Print-1880. ing Office.

A valuable summary of the legal rights of children; the first part treating the rights of children in general; the second part giving a comparative view of the system of education in the different States.

SPONS' ENCYCLOPEDIA OF THE INDUSTRIAL ARTS, MANUFACTURES, AND COMMER-CIAL PRODUCTS. London and New

York: E. & F. N. Spon. In 30 parts, 75 cents each.

Parts 12, 13, and 14 of the encyclopedia contain articles on coffee, cork, cotton manufacture, drugs, dyeing, quisite hardness. electro-metallurgy, and explosives.

THE LOCOMOTIVE ENGINEER'S TORCH. By Frank C. Smith. New York: George H. Frost. pp. 59.

A pocket book of practical instruction for engine drivers. The author frankly defines its province as simply to discuss such points of interest to the locomotive engineer as the writer happens to be acquainted with."

MANUAL OF HYDRAULIC MINING. BY T. F KREMER'S GRAPHIC RAILWAY GUIDE FOR GREAT BRITAIN AND THE CONTINENT. Price one shilling. Paris, London, and Nice

[November 13, 1880.

Contains a large number of skeleton tours in Europe, with sketch maps, official time tables of railways, steamboats, etc., and a considerable amount of information of use to travelers.



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 renewour 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 SUPPLE-MENT referred to in these columns may be had at this office. Price 10 cents each.

(1) A. D. T. writes: We are lubricating our engine cylinder with winter strained lard oil. We wish to use the exhaust from engine. Can we, after condensing and cooling the water, floatoff the oil in the condensed water so it will not be tainted to the taste; or will we be compelled to filter the water? A. You can either filter the water, or exhaust through a coil, so that the oil carried over will not mix with the water. We think the latter is the better plan.

(2) C. M. R. asks how to keep moisture and ice in winter from forming and accumulating on plate glass store windows. The size of the glass is about 4x1115 feet. A. The only really successful method of accomplishing this is to place a row of very small gas jets at the base of the window near the glass. (3) D. R. S. writes: 1. I wish a simple practical rule to determine the proper sizes to make foot wheel or band wheel of foot lathe (when the cones of lathe head are given), so that when the belt is changed it will be proper length on all of the sizes. A. THE MECHANICAL TREATMENT OF THE MORE If the two shafts are a good distance apart, it is suffi-COMMON ABNORMAL CONDITIONS OF THE ciently correct to make the sum of the diameters of the FOOT. By C. F. Stillman, M.S., M.D. two opposite pulleys the same or a constant quantity. Svo, paper, pp. 16. Reprinted from For a full explanation of the subject consult 'Goodeve's Elements of Mechanism." 2. What is the best book or books published for a common scholar to complete the science of land surveying, as practiced by our ordinary surveyors? A. Write the industrial publishers who advertise in our columns.

(4) F. W. asks: Why is it that I can plainly see in the reflected image of Jupiter in a look-TO OUR SENSE OF THE TWO OPPOSITE ingglass two of his moons, which I cannot see with FORCES OF ATTRACTION AND REPULSION | the naked eye when looking at the planet without the aid of the looking glass? A. You do not see the moons of Jupiter as you imagine. The extra images are pro-

> (5) R. H. G. asks: Can you give me through your paper a remedy for red ants? I have a house in which they fairly swarm, and cannot find anything that will drive them out. Have tried insect powder, bug poison, etc., without any good result A. Turpentine or benzine used in small quantities is one of the best remedies, we believe. A good way to exterminate these pests is to place a sponge filled with water sweetened with molasses in the infested spot. It will soon become filled with the insects which may be killed with hot water. This operation repeated daily will soon accomplish the desired result.

> (6) F. P. N. asks: What sort of lime is sed in combination with flour for making moulds? A. Usegood quicklime, a sufficient quantity togive the re-

(7) H. A. asks: What is the highest incline a common locomotive can climb? A. A grade of 1 in 10, or 528 feet to the mile, is the heaviest grade ever worked by a locomotive having no artificial "grip" to the rail, but depending upon gravity for adhesion.

(8) H. H. McC. writes: In SCIENTIFIC AMERICAN of April 26, 1879, in an article on faience manufacture, on first page, it is stated Wedgwood was the first to discern that silex was bleached by calcinaon, and that calcined silex bleaches clay. Van Wagenen, E.M. New York: D. Van I want to know is this: If clay bleaches oil, which it will, and silex bleaches clay, why will not silex bleach A useful little handbook for practical miners having oil? Do you know if calcined silex contains any substances on oils is mechanical. They are not under the circumstances, bleaching agents in a chemical sense. 2. Can calcined silex be bought in the market? A. Yes. 3. Is it sometimes called hydrate silica? A. No 4. And if calcined, would it be more costly than animal charcoal? A. Weight for weight calcined silica is much cheaper. 5. How would you calcine it-that is, silex? A. Reduce it to powder and heat to bright redness in contact with air. 6. Sulphate of soda is used in making a soft quality of soap hard. Can you tell me what the proportions are to use it? A. 3 to 5 per cent of the calculated weight of alkali. 7. In the present volume of SCIENTIFIC AMERICAN, page 35, you speak of The author holds that from ten to twelve hours' study of ice without freezing for skating rink, by mixture of chemicals. Could you give any instructions for making a geological and mineralogical expioration of the Sierra standing." His English style is intensely German, and parts of carbonate and subplate of soda in the smallest possible quantity of boiling water. The solution be comes solid by contact with cold air.

Blake "Lion and Eagle "Imp'd Crusher. See p. 269.

Rubber Packing, Soap Stone Packing, Empire Gum Core l'acking; quantities to suit. Greene, Tweed & Co.

Gas Machines.-Be sure that you never buy one until you have circulars from Terril's Underground Meter Gas Machine, 39 Dev St., New York.

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

Corrugate Wrought Iron for Tires on Traction Engines, etc. Sole mfrs., H. Lloyd, Son & Co., Pittsb'g, Pa. Peck's Patent Drop Press. See adv., page 268. Malleable and Gray Iron Castings, all descriptions, by Erie Malleable Iron Company, limited, Erie, Pa.

Skinner & Wood, Erie, Pa. Portable and Stationary Engines, are full of orders, and withdraw their illustrated advertisement. Send for their new oirculars Eagle Anvils, 10 cents per pound. Fully warranted,

Sweetland & Co., 126 Union St., New Haven, Conn., manufacture the Sweetland Combination Chuck

Power, Foot, and Hand Presses for Metal Workers. Lowestprices. Peerless Punch & Shear Co. 52 Dey St., N.Y. Wiley & Russell M'f'g Co. See adv., p. 269.

Nostrand.

no knowledge of hydraulic engineering, describing the bleaching or decolorizing properties similar to animal conditions and methods of placer mining, the properties charcoal? A. Try it. The bleaching action of such of water, construction of water ways, finmes, ditches, piping, sluices, etc.

SILVER AND GOLD TABLES. New York: Mathey, Kustel & Riotte.

A series of tables showing the value of silver and gold per ounce troy at any degree of fineness. Alsotablesof weight, and tables for the calculation of assay values, as used by the New York metallurgical works.

The first part of a series of text books on languages these charts will enable the student to "take up the text of Cæsar and Virgil so as to handle it with under an experimental skating rink? A. Dissolve equal Mojada, illustrated with maps and with plates of the his work is as uniutelligible as anything that has ever fossils observed. The volume as a whole is of con- come to our table,