

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.

Saw Filer and Clamp. Saves labor and files. Circulars free. W. Taft & Co., Tolland, Conn.

For Sale.—A 6 x 12 Double Cylinder Otis Hoisting Engine, nearly new. Rich, 120 N. 6th St., Philadelphia, Pa.

Ask for Hard Rubber Triangles, Curves, Scales, Squares, etc., made by Keuffel & Esser; the best drawing implements out; all warranted true; exchanged if not so. Don't buy imitations.

Chicago News.—Messrs. Armour Dalc & Co.'s immense new corn sheds, cor. of Sixteenth St. and Oakley Ave., are being roofed with H. W. Johns' Asbestos Roofing. More than fifty thousand square feet of roofing are required.

Manufacturers and Patentees of Meritorious Articles should write J. M. M. Conrad, 232 Baltimore st., Baltimore, Md., who has special facilities for introducing new goods.

Drop Forgings. Billings & Spencer Co., Hartford, Ct.

T. New, 32 John St., New York, has sold and applied over fifty million feet of his Prepared Roofing, the major part being placed upon manufacturing establishments.

Agents Wanted.—None but intelligent and energetic need apply. Must furnish good recommendations, or no notice will be taken of applications. Exclusive territory will be given up to May 15, 1882. Agents are now making from \$10 to \$15 a day. Address, for terms, The Infallible Coin Scale Co., 267 Broadway, New York city.

Improved Skinner Portable Engines. Erie, Pa.

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.

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

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

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

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

Latest Improved Diamond Drills. Send for circular to M. C. Bullock, 90 to 98 Market St., Chicago, Ill.

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

Cope & Maxwell Mfg. Co.'s Pump adv., page 263.

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.

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 252.

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

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

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.

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 270.

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

The Sweetland Chuck. See illus. adv., p. 270.

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

4 to 40 H. P. Steam Engines. See adv. p. 285.

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

Peck's Patent Drop Press. See adv., page 220.

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

Brass & Copper in sheets, wire & blanks. See ad. p. 285.

The Chester Steel Castings Co., office 407 Library St., Philadelphia, Pa. Can prove by 15,000 Crank Shafts, and 1,000 Gear Wheels, now in use, the superiority of their Castings over all others. Circular and price list free.

Paragon School Desk Extension Slides. See adv. p. 285.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Ball's Variable Cut-off Engine. See adv., page 286.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 286.

Patent Key Seat Cutter. See page 285.

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

Supplee Steam Engine. See adv. p. 221.

Lehigh Valley Emery and Corundum Wheels are acknowledged to be the safest, freest cutting, and most durable wheels in use. Write for prices, stating sizes you use. L. V. E. W. Co., Lehigh, Pa.

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

Saw Mill Machinery. Stearns Mfg. Co. See p. 286.

NEW BOOKS AND PUBLICATIONS.

THE STUDENT'S GUIDE IN QUANTITATIVE ANALYSIS. By H. Carrington Bolton, Ph.D. New York: John Wiley & Sons.

This guide is intended as an introduction to Fresenius's "system," as used in the Columbia School of Mines. It gives specific directions for making thirty-six typical analyses, and appears to be well suited to its purpose of smoothing the way to an intelligent use of the more difficult text books named.

THE SCIENTIFIC BASIS OF NATIONAL PROGRESS, INCLUDING THAT OF MORALITY. By George Gore, LL.D., F.R.S. London: Williams & Norgate.

Dr. Gore's thesis is that nations advance by new knowledge. The investigator discovers some new matter, combination, fact, or law; the inventor promptly applies it to the advancement of national wealth and power. The investigator and inventor may be one person; but in all cases the discovery precedes the application. And while the application brings wealth to the inventor, the investigator, pure and simple, usually gains little or nothing. Hence the necessity of making special provisions for the promotion of original scientific research, the direct source of the new knowledge whence comes all national progress, moral as well as material.

THE OCCULT WORLD. By A. P. Sinnett. Boston: Calby & Rich. \$1.

Mr. Sinnett writes very earnestly and confidently of the magical power and knowledge of the adepts of "Occultism;" of the Theosophical Society and their recent performances in India; and of the teachings of occult philosophy. He seems always on the point of telling something credible, but he never does. The rational mind of the West, unlike that of Asia, is more impressed by evidence than by sheer assertion, however bold; and it will require something more than tricks with cigarettes and saucers to convince the Western World that the adepts of "occultism" have unlimited knowledge and power to work miracles at will.



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) Mrs. S. M. A. asks: What kind of tools are commonly employed in the manufacture of artificial flowers? A. The principal tools used by artificial florists are: Stamps, an arrangement of knives of various sizes and shapes by means of which leaves and petals are cut out. The material to be shaped is laid, folded several times, upon a leaden table, and the stamp is driven through it with a hammer or mallet. This part of the work is usually done by men. Moulds called veiners, as the name indicates, employed to vein the leaves; burnishers of glass or agate give the leaves the appearance of most real foliage and flowers. As a rule, the florists' fingers, guided by taste and skill, are found better than other mechanical appliances. The best flowers are painted by hand. See "Dictionnaire Universel du XIX. Siecle." Larousse, art. "Fleurs Artificielles;" and "Art of Making Paper Flowers," by Mrs. Bartlett (New York).

(2) F. A. A. asks: Do you know of any metal or combinations of metals that will not expand and contract with the heat and cold, and which will have a degree of hardness equal to steel drawn to a low blue? I think I have heard that palladium is not affected. A. We know of no such metal or alloy. Palladium, in common with other metals, is alterable by variation, of temperature. Consult Gutter's "Metallic Alloys."

(3) J. V. C. asks: What size engine will I need to drive a portable saw mill for sawing three foot maple logs? A. It will depend upon the quantity you wish to saw per day. You may use a 15 horse engine or a 40 horse engine. A good 20 horse power engine will saw about 10,000 feet per day.

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

W. H. G.—No. 1. Quartz and pyroxene. No. 2. Altered quartzose rock, containing a little selenite. No. 3. Red jasper. No. 4. Vein quartz with calciferous clay selvage. No. 5. A ferruginous quartz rock. Nos. 2, 4, and 5 may contain traces of precious metals. Assays will be necessary to determine this.—W. M. E.—It is an impure hornblende rock and probably contains nothing of value.—A. E. U.—Sample of "fiber" received, but no letter.—H. Z.—Hematitic argillite, containing a small quantity of molybdenite.—H. A. I.—It is a common clay slate—not what is sometimes called "blossom." It cannot be strictly considered as an indication of coal.—Rev. H. C. S.—It is a nodule of partially altered iron pyrites, iron sulphide. Not valuable.—J. V. McC.—It is sulphide of iron, pyrites, of very little value.—R. W.—The ochre is of fair quality, but somewhat coarse and gritty. It will be necessary to grind it finer. Address some manufacturer of paints.

COMMUNICATIONS RECEIVED.

On the Liver Fluke. By R. W. S. On the Explosion of a Sawmill Boiler. By H. J. B.

INDEX OF INVENTIONS FOR WHICH Letters Patent of the United States were Granted in the Week Ending April 18, 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., 351 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 inventions with names and dates. Includes: Adding machine, F. Plumb; Advertising table, W. Wilson; Amalgamator, C. Pontez; Apparatus for administering injections, P. V. Schenck; Atomizer, J. Beggs; Auzer, earth, W. Brunner; Axle lubricator, vehicle, E. Firth; Axle skein, J. & P. Herrmann; Axle skein, wagon, J. Sandage; Bar, See Chain cross bar; Barrel, J. J. Lück; Battery, See Galvanic battery; Batting, Smith & Beale; Bed bottom, E. B. Hull; Bed fastening, P. Forg; Bedstead, F. G. Ford; Bedstead, bureau, Maasch & Bertram; Bedstead, wardrobe, E. Ortlepp; Beer, cooling, D. W. Davis; Beer drawing apparatus, C. A. Maus; Beer, manufacture of root or tonic, L. Becker; Bell for table ware, call, Miller & Berry; Bell, gong, G. B. Owen; Belt, electric, T. W. Williams; Betting, method of and implement for uniting the ends of, W. M. Whitling; Bier, C. J. Everhard; Billiard cue tips, clamp for holding, J. Recktenwaldt; Binder, temporary, J. A. Berstler; Boiler, See Steam boiler. Wash boiler; Boiler tubes, device for cutting, J. J. Franklin; Bolt, See Spring bolt; Bolt threading machine, C. H. Graham; Bookcase, revolving, D. M. Schell; Boot or shoe, rubber, W. Cable; Boot, seamless felt, M. R. Bissell; Boring, apparatus for subaqueous, T. English; Box, See Cigarette box. Syringe box; Box fastener, G. S. Randall; Brace, See Chair brace; Bracket, See Dental bracket. Shelving bracket; Brake, See Car brake; Brush, D. A. McDonel; Buckle and snap hook, combined, W. M. Morse; Buckle, back band, J. A. Lowe; Burial case, J. H. Hedenberg; Burner, See Hydrocarbon burner; Butter mould, J. De Carly; Button, G. K. Webster; Button setting machine, A. Appler, Jr.; Cab, F. Forder; Can, See Cracker and grocer's can. Refrigerating can; Cane mill, sugar, D. Stewart; Car brake, J. B. Bray; Car brake, J. Meissner; Car brake, A. C. Springer; Car brake, railway, C. E. Kendall; Car, cattle, E. Kohler; Car coupling, P. A. Aikman; Car coupling, S. & R. S. Tappenden; Car coupling, F. Voegtle; Car coupling tool, B. Askew; Car, railway, C. H. Bradley; Car, safety, A. A. Starr; Car shunter, L. Collins; Card grinding machine, J. J. Hoey; Carrier, See Lantern carrier; Cartridge primer, A. J. Hobbs; Case, See Bookcase. Burial case. Cell case; Caster, trunk, J. J. Cowell; Catheter, double, E. Pfarre; Cell case, I. Nichols; Chain cross bar, S. Davidson; Chain, drive, J. M. Dodge; Chair, See Reclining chair; Chair brace, J. A. Gallagher; Chandelier, S. S. Newton; Chandelier, lamp, J. A. Everts; Channel and feather cutter, P. F. Barry; Check register, A. H. Austin; Check row attachment, Cox & Morrisey; Chuck, drill, G. Rehfsuss; Chuck, planer, G. B. Durkee; Churn dasher, C. Friedeborn; Cigarette, S. Jacoby; Cigarette box, G. Gollasch; Clamp, See Saw handle clamp; Clamp, J. S. Adams; Cleaner, See Grain cleaner; Clock movement, F. A. Lane; Clocks, striking device for electric and other, A. Lemoine; Clothes horse, H. M. Sweet; Cockle separating machine, W. E. Gorton; Coffee and nut roaster, T. F. McCaffrey; Coffin, C. H. Olson; Coloring matter, production of, C. H. Rudolph; Column, shaft, girder, etc., H. J. Harrison; Condenser, W. D. Hooker; Condenser, steam, C. P. Deane; Cork extractor, W. Meyer; Corral, portable, C. A. Tarragon; Coupling, See Car coupling. Trace coupling; Cracker and grocer's can, combined, C. F. Markland; Crimping machine, S. A. Gould; Crushing and grinding limestone rock, etc., machine for, J. Hause; Culinary vessel, W. H. Daniell; Cultivator, R. H. Avery; Cultivator, S. A. Batson; Cultivator, E. E. Bostwick; Curtain fixture, H. Farley; Curtain fixture, W. P. Putnam; Cuspidor, H. F. Malloy; Cuspidor, H. L. Palmer; Dental bracket, H. C. Merrill; Dental engine hand piece, W. H. Kimball; Die and die stock, J. Gassmann; Display rack folding, J. Smith;

Table listing inventions with names and dates. Includes: Dock, floating dry, L. C. Watts; Door lock and latch, O. Flagstad; Drawer lock, F. W. Mix; Drawers or tights, R. M. Appletton; Drier, See Fruit drier; Drier, G. F. Robinson; Drill, See Grain drill. Rock drill; Drum strap, A. Voegel; Drying and heating apparatus, A. Dreyfus; Dyeing purposes, ink for, Reid & Eastwood; Electric light, C. P. Hoenack; Electric light carbon, J. B. King; Electric light guard, W. McDeavitt; Electric machine, dynamo, G. H. Bangs; Electric machine, dynamo, E. Weston; Electric machine, dynamo, L. G. Woolley; Electric motor, J. D. Kiely; Electric signal transmitter, J. King; Electro-magnetic motor, L. G. Woolley; Elevator, See Hydraulic and pneumatic elevator. Wood and coal elevator; Elevator, S. H. Thornton; Ellipsograph, E. E. Clark; End gate, wagon, G. Quick; Engine, See Logging engine. Pulp engine; Extractor, See Corn extractor; Faucet, J. H. Howes; Faucet, water, J. Stephenson; Fence nail, wire, C. W. Dean; Fence nail, wire, S. Leonard; Fence rail, barbed metallic, G. C. Baker; Fence wire machine for making barbed, Converse & Cady; Fertilizer distributor, J. L. Bergen; Fertilizer distributor, J. M. Heulings; File, paper bag, L. R. Witherell; Flood gate, O. M. Hemingway; Fork, See Lifting fork. Pitch fork; Fountain, See Wash boiler fountain; Frame, See Harvester frame. Saw mill frame; Fruit cleaning machine, Rice & Ovens; Fruit drier, W. J. Bacon; Fruit drier, Burnett & Hill; Fuel, artificial, J. T. Jackson; Furnace, See Glass melting furnace; Furnace feeder, automatic, A. Waters; Furnace for treating the ores of mercury, Hall & Haskins; Furnace grate bar, crucible, Schöndorf & Preib; Furnace linings and bottoms, composition for refractory, A. E. Tucker; Galvanic battery, G. M. Hopkins; Game apparatus, G. R. Spear; Gas and electric lamp fixture, combined, E. H. Johnson; Gasgenerating apparatus, E. B. Reynolds; Gas governor for vulcanizers, T. Shaw; Gate, See End gate. Flood gate; Generator, See Steam generator; Glass melting furnace, F. Siemens; Glass sirup can and mould for making the same; Fuhrhake & Brady; Glove, H. S. Flood; Glycerine and apparatus therefor, process of extracting, B. T. Babbitt; Glycerine from salt soap lye, extracting, B. T. Babbitt; Grain binder, N. T. Remy; Grain cleaner, S. Truax; Grain drill, H. P. Tenant; Grain drill, force feed, H. P. Tenant; Grate, sifting, James & Dunbar; Grinding mill roll, R. Birkholz; Ground roller, J. Steislinger; Guard, See Electric light guard; Gun, bomb, P. Cunningham; Handle, See Trunk handle; Harrow, J. H. Barley; Harvester, T. A. Jones; Harvester, O. Simpson; Harvester frame, P. Hanson; Hat sizing machine, M. Chittenden; Hay loader, G. W. Le Vin; Hay rake, sulky, W. P. Prull; Heater, See Photographic silver bath heater; Hinge, gate, I. Gaston; Holder, See Lathe cutter holder. Lead and crayon holder. Sash holder; Hoop making machine, J. B. Dougherty; Hot water or steam main or pipe, R. H. Buel; Hydrants and water mains, electric alarm for, U. Thompson; Hydraulic and pneumatic elevator, Johnson & Bailey; Hydrocarbon burner, E. N. Dickerson, Jr.; Inhaler, J. H. Nelson; Insect destroyer, W. L. Waddy; Iron, See Sad iron; Iron and other plates, apparatus for galvanizing and coating sheet, J. Mulholland, Jr.; Journal bearing, W. L. Clark; Key, See Telegraph key; Knife, See Skinning knife; Knitting machines, stop motion for circular, R. M. Appletton; Lacing stud, S. Montgomery; Lamp, D. Bennett; Lamp chimney, J. B. Döbelmann; Lamp chimney, H. L. Hawes; Lamp, electric, C. P. Hoenack; Lamp, electric, C. T. Holloway; Lamp, electric, E. J. Houston; Lamp, electric, L. Sexauer; Lamp, electric, E. Thomson; Lamp, electric, L. G. Woolley; Lantern carrier, A. J. Curtis; Lard and tallow tank, J. K. Martin; Latch, gate, L. L. Lightcap; Lathe, button turning, G. L. Pallatt; Lathe cutter holder, F. N. Gardner; Lead and crayon holder, J. Illfelder; Lifting fork, G. W. McDannold; Light, See Electric light; Link, swivel, D. F. Spangler; Lock, See Door lock. Drawer lock. Nut lock. Seal lock; Logging engine, J. Dolbeer; Lubricator, See Axle lubricator; Lubricator, M. D. Miller; Lubricator, A. Weber; Lumber from the crib, apparatus for drawing, J. W. Stillwell; Mail bag fastening, E. A. Brandau; Manger, O. C. Burdick; Marking and cutting instrument, combined, E. C. Holley; Measure, dimension, R. Wittmann; Mechanical movement, J. B. Bray; Metal breaker, drop, E. S. Wenrich; Metals, ornamenting, J. D. Planchamp; Millstone driver, J. H. Wooster; Mould, See Butter mould;