

Business and Personal.

The Charge for Insertion under this head is \$1.00 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.

Air pumps for High Pressure, Hand or Steam Power. C. Beseler, 218 Centre Street, New York.

Send for illustrated catalogue of Electrical Instruments, supplies, and Books to L. N. Hopkins & Co., 267 Broadway, New York.

Mr. T. D. Locking, Care, U. S. Consul, Panama, U. S. Columbia, will sell the whole or a portion of his patent for umbrellas, illustrated in this issue.

For Sale—Two 10 horse power Portable Engines and Boilers, complete and in good repair. Price \$250. S. M. York, Cleveland, O.

For second-hand engines and boilers, address Young & Locke, Titusville, Pa.

American Fruit Drier. Free Pamphlet. See ad., p. 77.

72" Independent 3 Jaw Chucks, \$42; 48", \$36; 24", \$30. Warranted best in the world, and sent on trial. American Twist Drill Co., Meridith, N. H.

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

Peck's Patent Drop Press. See adv., page 77.

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

Paragon School Desk Extension Slides. See adv. p. 78.

Drop Forgings. Billings & Spencer Co. See adv., p. 77.

Brass & Copper in sheets, wire & blanks. See ad. p. 76.

Cope & Maxwell M'fg Co.'s Pump adv., page 77.

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.

Diamond Drills, J. Dickinson, 64 Nassau St., N. Y.

Blind Wire and Borers. B.C. Dav's, Binghamton, N. Y.

Eagle Anvils, 10 cents per pound. Fully warranted.

Tight and Slack Barrel machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv. p. 77.

Upright Self-feeding Hand Drilling Machine. Excellent construction. Pratt & Whitney Co., Hartford, Conn. C. B. Rogers & Co., Norwich, Conn. Wood Working Machinery of every kind. See adv., page 78.

Common Sense Dry Kiln. Adapted to drying of all material where kiln, etc., drying houses are used. See p. 78.

Wanted Immediately—A first-class Steel Letter Cutter. H. W. Gordon, Lynn, Mass.

Two or three first-class journeymen machine pattern makers can find steady employment with Poole & Hunt, Baltimore, Md. Location pleasant and beautiful.

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.

The Sweetland Chuck. See illus. adv., p. 62.

Improved Skinner Portable Engines. Erie, Pa.

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

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

Lighting Screw Plates, Labor-saving Tools. p. 62.

See New American File Co.'s Advertisement, p. 46.

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

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

For Mill Mach'y & Mill Furnishing, see illus. adv. p. 44.

Steam Pumps. See adv. Smith, Vaile & Co., p. 46.

Pure Water furnished Cities, Paper Mills, Laundries, Steam Boilers, etc., by the Multifold System of the Newark Filtering Co., 177 Commerce St. Newark, N. J.

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

List 28, describing 3,600 new and second-hand Machines, now ready for distribution. Send stamp for same. S. C. Forsaith & Co., Manchester, N. H. and N. Y. city.

Nickel Plating.—Sole manufacturers cast nickel anodes, pure nickel salts, polishing compositions, etc. Complete outfit for plating, etc. Hanson & Van Winkle, Newark, N. J., and 92 and 94 Liberty St., New York.

Latest Improved Diamond Drills. Send for circular to M. C. Bullock Mfg. Co., 80 to 88 Market St., Chicago, Ill.

First Class Engine Lathes, 20 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 3053, 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.

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.

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

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

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

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.

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

NEW BOOKS AND PUBLICATIONS.

BULETTI MENSUAL DE LA ASSOCIACION D'EXCURSIONS CATALANA. Any V. Nos. 40 y 41. Barcelona.

This is a monthly journal published by an association in Catalonia having for its object researches, through field excursions, into the natural history and archaeology of that portion of Spain. The number before us contains considerable interesting matter in regard to the antiquities of Catalonia, and is illustrated with very well executed engravings.

CELEBRATED AMERICAN CAVERNS. ESPECIALLY MAMMOTH, WYANDOT, AND LURAY; WITH BRIEF NOTICES OF CAVES AND GROTTOS IN OTHER LANDS. By Horace C. Hovey. Cincinnati: Robert Clarke & Co. 8vo, pp. 228. \$2.00.

The author of this monograph is widely known as a successful explorer of underground America, having already published numerous articles in the SCIENTIFIC AMERICAN, Scribner's Magazine, and other periodicals, besides papers read before the American Association for the Advancement of Science. Here, however, Mr. Hovey presents a large amount of new material, gathered in recent explorations, and carefully compared with more early accounts. The volume opens with chapters on the structure, varieties, and contents of caves; followed by a condensed account of cave dwellings, temples, and tombs. The "bone caves" of this and other countries supply some of the chief sources of information concerning prehistoric man, and these are treated of by the author in a manner showing his familiarity with archaeological investigations. While the work is evidently not intended as a guide book, it will be found to answer for that purpose admirably, so far as Mammoth, Wyandot, and Luray caves are concerned. Among other caves described are Weyer's, Howe's, Pickett's, the Canadian caverns, the cave of Caca-huamli; and, indeed, we do not know of a single cavern of note that is not mentioned in these pages. The book contains more than forty engravings, besides maps and diagrams from recent surveys. An appendix gives a complete list of subterranean fauna, including an account of the famous eyeless fish, and other singular forms of life.



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) C. E. A. asks: 1. What can I use to polish brass, such as the brass on a locomotive, that will give a fine polish without much rubbing and will not easily tarnish? A. If you are constantly cleaning the brasswork of your locomotive, use ordinary whiting or chalk and a cotton or woolen cloth, with a little moisture by breathing, or from another cloth a little wet. If the work becomes stained or slightly oxidized by several days' running, then use rottenstone and oil on a cloth until the surface is clean, and finish with whiting for gloss. If parts become corroded and blackened, use a little oxalic acid in water with the rottenstone instead of oil. 2. Also something that I can use to polish paint work with? A. After cleaning your painted work you can brighten it by rubbing with a cloth moistened slightly with equal parts turpentine and boiled linseed oil. 3. Why does the water in a water-glass rise when the steam is shut out of the top? Does the steam condense in top of glass? A. The steam condenses in the top of the glass and draws the water to fill its place.

(2) E. C. R. asks: Please be kind enough to inform me what kind of transparent coating to use on bright steel wire, to prevent rust and not destroy the brilliancy? A. Try the following: Dissolve half an ounce of camphor in two ounces of wine spirit and mix this with two pints of fine sperm oil. Allow the wire to remain in contact with this mixture, heated to 180° Fah., for half an hour, then rub off excess with a soft cotton cloth.

(3) D. M. writes: To settle a dispute with you please inform us in your columns, whether the laws of the State of New York prevent a proprietor acting as his own engineer, he being capable? A. A proprietor can act as his own engineer, but he must pass examination and take out a license same as any other engineer.

(4) E. E. M. says: In an April number of your paper appeared an article appertaining to the comet, and stating what a wonderful sight it would make in the northern heavens in the months of May and June. Now what I want to know is why it has not appeared as predicted. A. "Comet a 1882," discovered on the 18th of March, by Mr. Wells, of the Albany Observatory, certainly failed to carry out the expectations that were raised concerning it. It was, however, a well behaved comet in all points excepting in reaching the size

predicted. It followed closely in the path predicted for it by astronomers, reached perihelion on June 10, the appointed time, and it is highly probable that we shall soon hear tidings of its reappearance as it recedes from the sun. It was frequently seen in May by naked eye observers, was an easy object in the telescope, where it was followed until it reached perihelion, even in full daylight, when in near vicinity to the sun. Its tail did not reach the dimensions anticipated, much to the sorrow of astronomers. But nothing is more uncertain than the movements of comets, and "Comet a" is not the first one that has disappointed human calculation. Where comets are concerned we can only predict probabilities, never certainties.

(5) J. M. asks: Please inform me how to color straw with aniline dyes? I have tried, but the dye comes off. A. Steep the straw for several hours in hot water containing about half an ounce of tannin to the gallon, then pass it through hot water containing about an ounce of white glue to the gallon and dry in the air slowly, then dye, using weak baths. Straw may also be colored by passing it through a bath of any thin pale spirit varnish holding the desired color in solution.

(6) C. W. B. asks: I desire to ask your opinion about a certain phenomenon I witnessed some time since. While viewing the moon with a forty-four inch refracting telescope with a power of about sixty, I saw a star pass apparently on the disk of the moon apparently three times its diameter and then disappear. What was the cause of this singular appearance? I have never seen any account in any astronomy of such a phenomenon being witnessed. A. The lingering of stars upon the disk of the moon at the moment of occultation is supposed to be due to the principles of diffraction or the bending of rays of light when passing a solid body. Imperfect qualities in the defining power of the telescope may have much to do in the apparent overlapping of the disk of a star. If the telescope was perfect you could scarcely notice that there is a disk, under low powers.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

July 11, 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 1881, 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 inventions with patent numbers and dates. Includes items like Addressing machine, Aerated beverages, Alarm, Alkali ball mould, Alkali from gluten, etc.

Table listing inventions with patent numbers and dates. Includes items like Can, Candle holder, Car brake, Car coupling, Carriage lamp holder, etc.