

Founded by Mathew Carey, 1785. HENRY CAREY BAIRD & CO. INDUSTRIAL PUBLISHERS, BOOKSELLERS & IMPORTERS 810 Walnut St., Philadelphia, Pa., U. S. A.

Pork and Beef Packer's Directory and Handbook. 7,000 names, 440 pages, half tone paper, cloth bound. Price \$10

CARBORUNDUM HARDEST ABRASIVE KNOWN. EMERY AND DIAMOND POWDER. SUBSTITUTE IN FLOUR, POWDER, CRYSTAL, WHEEL, SLAB & HONE FORM.

DEER PARK, On the Crest of the Alleghenies.

To those contemplating a trip to the mountains in search of health and pleasure, Deer Park, on the crest of the Allegheny mountains, 3,800 feet above the sea level, offers such varied attractions as a delightful atmosphere during both day and night, pure water, smooth, winding roads through the mountains and valleys, and the most picturesque scenery in the Allegheny range.

The surrounding grounds as well as the hotel are lighted with electricity. Six miles distant on the same mountain summit, is Oakland, the twin resort of Deer Park, and equally as well equipped for the entertainment and accommodations of its patrons.

ARMSTRONG'S * PIPE * THREADING AND CUTTING-OFF MACHINES Both Hand and Power. Sizes 1 to 6 inches.

AMERICAN GAS FURNACE CO. of ELIZABETH, N. J., PATENTERS OF A Complete System for the generation of a CHEAP AND PERFECT FUEL GAS.

FOR Country Residences We make a specialty of Outdoor Lighting (Kerosene), for Country Residences. We make Lamps to use on Porches, for Lighting Driveways, for Sides of Gates, and for Stables.

AMERICAN DESK 4 ft. Desk \$16 4 1/2 ft. " 18 5 " " 20 Send for catal. 18-20 E. Van Buren St., Chicago, U. S. A.

NAFEW-LOVELL CHECK PROTECTOR Perfect in construction. Modern. Highly Finished and Cheapest. Simple in Operation. Compact. No parts to wear out.

Architectural Books Useful, Beautiful and Cheap. Any person about to erect a dwelling house or stable, either in the country or city, or any builder wishing to examine the latest and best plans for a church, school house, club house, or any other public building of high or low cost, should procure a complete set of the ARCHITECTS' AND BUILDERS' EDITION of the SCIENTIFIC AMERICAN.

ROSE POLYTECHNIC INSTITUTE, Terre Haute, Ind. A School of Engineering, Mechanical, Electrical, Civil Engineering, Chemical courses. Well endowed. Extensive Shops and Foundry. Modernly equipped Laboratories in all departments. Expenses low. Address C. L. MEES, President.

ENGINEERING FALLACIES.—AN Address to the graduating class of the Stevens Institute of Technology, by President Henry Morton, on certain popular fallacies likely to be encountered by young engineers, and which may sometimes lead even able men astray when met with in a new guise. With 2 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 994. Price 10 cents. To be had at this office and from all newsdealers.

MUNN & CO., Publishers, 361 Broadway, New York.

Chain BELTING of Various Styles, ELEVATORS, CONVEYORS, COAL MINING and HANDLING MACHINERY. The JEFFREY MANUFACTURING CO., COLUMBUS, O. Branches: CHICAGO—NEW YORK.

PRETISS TIME SYSTEM 8, 30, 60, 90 and 100 day movements. SYNCHRONIZED CLOCKS Synchronizers for Time-Stamped and Record-ers. Also Mechanical Self-winding Clocks.

CALENDOLI'S TYPESETTING MACHINE.—Description of a machine recently invented by Father Calendoli, a Sicilian Dominican, which permits an experienced operator to compose fifty thousand letters an hour. With 7 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1005. Price 10 cents. To be had at this office and from all newsdealers.

Durable—Easily Applied. This roofing is manufactured from natural Trinidad asphalt materials, and will not dry up and become brittle under exposure to the weather as coal-tar roofings do.

VOLNEY W. MASON & CO. FRICTION PULLEYS, CLUTCHES, and ELEVATORS PROVIDENCE, R. I.

F. W. G. WOOD ENGRAVER'S LINER All sizes from No. 1 to 30, for 2 to 26 lines. Lines Uniform, Sharp and Deep. The only Liner made that will work from black into white.

SCIENTIFIC BOOK Catalogue RECENTLY PUBLISHED. Our New Catalogue containing over 100 pages, including works on more than fifty different subjects. Will be mailed free to any address on application.

THE ELECTRIC LAUNCH CO. OFFICE AND WORKS, 186 STREET MORRIS HEIGHTS, NEW YORK CITY

MONITOR VAPOR ENGINE AND POWER COMPANY, 8 ERIE STREET, GRAND RAPIDS, MICHIGAN. CASOLINE LAUNCH ENGINES AND LAUNCHES

ALCO VAPOR LAUNCH. Engine and helm controlled from bow. Latest improved and only 12 to 1 motor now ready for the market. 18 to 40 ft. launches 2, 3, 5 and 7 h. p. No licensed engineer or pilot required. Speed 8 to 10 m. p. No dangerous naphtha or gasoline used.

PATENTS taken through Munn & Co. receive special notice in the Scientific American. This splendid weekly paper, elegantly illustrated, has the largest circulation of any scientific work. \$3 a year. Specimen copies free. Address MUNN & CO., New York, 361 Broadway.

ICE MACHINES, Carliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO., 899 Clinton Street, Milwaukee, Wis.

ENGINEERING FALLACIES.—AN Address to the graduating class of the Stevens Institute of Technology, by President Henry Morton, on certain popular fallacies likely to be encountered by young engineers, and which may sometimes lead even able men astray when met with in a new guise. With 2 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 994. Price 10 cents. To be had at this office and from all newsdealers.

ROSE POLYTECHNIC INSTITUTE, Terre Haute, Ind. A School of Engineering, Mechanical, Electrical, Civil Engineering, Chemical courses. Well endowed. Extensive Shops and Foundry. Modernly equipped Laboratories in all departments. Expenses low. Address C. L. MEES, President.

Family Ice Machine Ice, etc., in a few minutes, \$10 and up. Filters, \$1.25 and up. Cookers, \$1. Seltzateurs to prepare one's self soda water, \$4.50 and up. L. DERMIGNY, 126 W. 25th St., N. Y.

WATER MOTORS GAS ENGINES & VENTILATING FANS The best Motor in the world for driving all kinds of light machinery, noiseless, neat, compact; invaluable for blowing church organs, running printing presses, coffee mills, ventilating fans, ice cream freezers, meat choppers, etc.

RED CEDAR TANKS Up to 30 ft. Diameter. WHITE PINE CYPRESS, REDWOOD. 16 Murray St., New York. 36 S. Market St., Boston. 321 Vine St., Philadelphia. WILLIAMS MFG. CO. Kalamazoo, Mich.

MEASUREMENT OF POWER.—BY G. D. HISCOX, M.E. A description of several improved forms of absorption and transmitting dynamometers for the measurement of the useful work of prime movers in mills and factories. With 17 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 992. Price 10 cents. To be had at this office and from all newsdealers.

EDGE TOOLS are often nearly ruined by using a grindstone not adapted to the work. Our quarries produce a large variety of grinds suitable for grinding any tool.

Telephones Sold outright. Cannot get out of order. Guaranteed free from infringement. Suitable for exchanges or private plants. Send for Testimonials and Prices. Some good territory left for reliable agents.

Engineers and Firemen Send 2c. stamp for 24 containing a list of questions asked by a board of examining engineers. Stronberg Pub. Co., St. Louis, Mo.

GASOLINE ENGINES. 14 to 75 horse power. For Propelling Boats of all kinds. Cheapest Fuel, Absolute Safety, No Licensed Engineer, Simple Construction, Hundreds in Successful Use.

SEND FOR CIRCULAR. SCIENTIFIC AMERICAN DYNAMO. Description of a plain shunt-wound dynamo of simple construction, capable of supplying a current of from 60 to 75 110-volt incandescent lamps, or of being used as a 5 h. p. motor.

MONEY MADE selling Heyliger's Automatic Cooker. Best cooking utensil. Food can't burn. No odor. Saves labor and fuel. Fits any kind of stove. Agents wanted, either sex. Good pay. One agent sold 1730 in one town. Write for terms. W. E. BEVERIDGE, Baltimore, Md.

HELLO, CENTRAL! Do you use telephones? If so, we can give you just what you want. Our specialty is Blake Transmitters. There is a "best" in everything, and ours are the best. We supply complete telephones or all or any of the parts to construct a telephone. Write for illustrated catalogue.

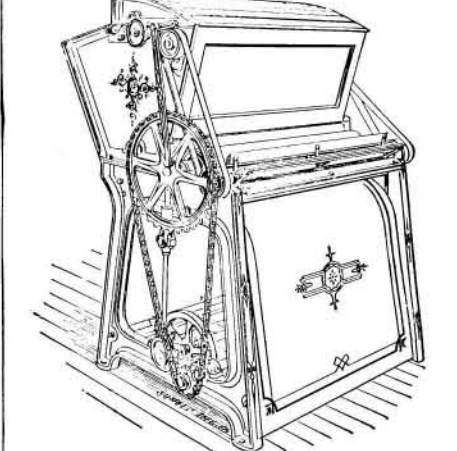
ARGON, THE NEW CONSTITUENT of the Atmosphere.—A very full abstract of a paper by Lord Rayleigh and Prof. William Ramsay, read before the Royal Society. Reasons for suspecting a hitherto undiscovered constituent in the air. Proof of the presence of argon in the air by atmolytic. Separation of argon on a large scale. Density, spectrum and behavior of argon. Liquefaction and solidification of argon. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 1000, 1001 and 1002. Price 10 cents each. To be had at this office and from all newsdealers.

OUR WELL DRILLS awarded Highest Medal at the World's Fair. All latest improvements. Catalogue free. F. C. AUSTIN MFG. CO., CHICAGO, ILL.

BOILERS AND ENGINES Horizontal and Upright, OF ALL SIZES.—FOR ALL PURPOSES All Dairy and Creamery Supplies, Apparatus and Packages. Creamery Package Manufg. Co., Chicago, Ill.

GAS ENGINE CASTINGS also for Water Motor, Dynamo, Boiler, Engine, etc. A. F. WEED & CO., 106 Liberty St., N. Y.

A REVOLUTION!!! A New COTTON GIN and WOOL BURRER.



Inventive genius has at last produced a machine that will send into retirement the old Saw Gin so long tolerated, owing to enormous development in the cotton industry. The Universal Cotton Gin and Wool Burrer Company are taking out patents in the principal countries, and make claim to superiority over the system now in use on the following among other points: The new Koller Gin will preserve the fibre intact; clean the seed more thoroughly, and thus save a large amount of cotton; prevent the possibility of fire; perform the work with a minimum of power; require comparatively no repairs; require but little if any cleaning, and have no saws to sharpen. They are the acme of simplicity in construction and effectiveness in economical working.

UNIVERSAL COTTON GIN & WOOL BURRER CO., Room 60 FISKE BUILDING 89 STATE ST., BOSTON.

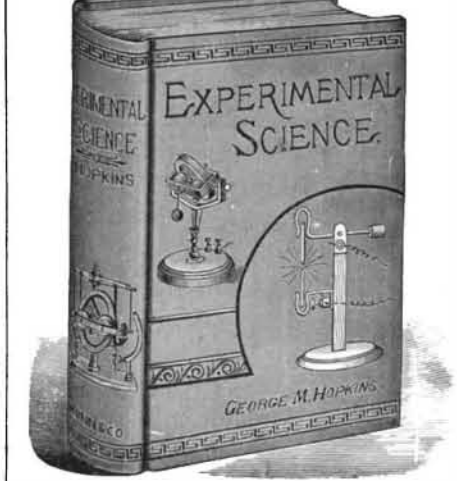
DEAFNESS and HEAD NOISES relieved by using Wilson's Common Sense Ear Drums. New scientific invention, entirely different in construction from all other devices. Assist the deaf when all other devices fail, and where medical skill has given no relief, safe, comfortable, and invisible; no wire or string attachment. Write for pamphlet. WILSON EAR DRUM MANUFG. CO., Louisville Trust Co. Building, Louisville, Ky. Mention this paper. and 1122 Broadway, New York

MATCH * MACHINERY. Latest improved. Complete plants furnished. JOS. C. DONNELLY, 1209 Buttonwood Street, Philadelphia, Pa.

PATENT STEEL SKELETON LEGS ARE THE BEST. Established 1849. D. W. KOLBE & SON, 1339 Arch St., Philadelphia.

SAFETY THRUST COLLARS SOLID AND SPLIT. Of character and at price to suit the most critical buyer. Dealers in shafting will consult their interests in writing for Price List and Discounts. THE GOVERNEUR MACHINE CO., Gouverneur, N. Y.

NOW READY! Seventeenth Edition of Experimental Science



REVISED AND ENLARGED. 120 Pages and 110 Superb Cuts added.

Just the thing for a holiday present for any man, woman, student, teacher, or anyone interested in science. In the new matter contained in the last edition will be found the Scientific Use of the Phonograph, the curious optical illusion known as the Anorthoscope, together with other new and interesting Optical Illusions, the Optical Projection of Opaque Objects, new experiments in Projection, Iridescent Glass, some points in Photography, including Hand Cameras, Case Cameras, etc.; Systems of Electrical Distribution, Electrical Ore Finder, Electrical Ricker, Electric Chimes, How to Color Lantern Slides, Study of the Stars, and a great deal of other new matter which will prove of interest to scientific readers. 84 pages, 782 fine cuts, substantially and beautifully bound. Price in cloth, by mail, \$4. Half morocco, \$3.50. Send for illustrated catalogue. MUNN & CO., Publishers, Office of the SCIENTIFIC AMERICAN, 361 BROADWAY, NEW YORK.