

Founded by Mathew Carey, 1785.
HENRY CAREY BAIRD & CO.
 INDUSTRIAL PUBLISHERS, BOOKSELLERS & IMPORTERS
 810 Walnut St., Philadelphia, Pa., U. S. A.
 Our New and Revised Catalogue of Practical and Scientific Books, 90 pages, 57c, and our other Catalogues and Circulars, the whole covering every branch of Science applied to the Arts, sent free and free of postage to anyone in any part of the world who will furnish his address.

AGENTS \$75 A WEEK
 AT HOME, using or selling **PRACTICAL PLATING DYNAMO.** The modern method, used in all factories to plate new goods. Plates gold, silver, nickel, etc. on watches, jewelry, table-ware, bicycles and all metal goods; fine outfits for agents; different sizes; always ready; no battery; no toy; no experience; no limit to plating needed; a great money maker.



W. P. HARRISON & CO., Clerk No. 15, Columbus, Ohio.

Map of the United States
 A large, handsome Map of the United States, mounted and suitable for office or home use, is issued by the Burlington Route. Copies will be mailed to any address, on receipt of fifteen cents in postage, by P. S. EUSTIS, General Passenger Agent, C., B. and Q. R. R., CHICAGO, ILL.

"DIETZ" TUBULAR DRIVING LAMP.
 IT is the only practical and perfect driving lamp ever made. IT will not blow out. IT gives a clear white light. IT looks like a locomotive head light. IT throws all the light straight ahead from 200 to 300 feet. IT burns kerosene.



Send for Book. **R. E. Dietz Co.** 77 Laight Street, New York.

The Scientific American Reference Book.
 A most useful little bound book of 150 pages, comprising, probably, the most extensive variety of standard, practical, condensed information ever furnished to the public for so small a price, only 25 cents.

Among its contents are: The Last Census of the United States (1890), by States, Territories, and Counties; Table of Cities having over 8,000 inhabitants; Map of the United States—miniature outline; The Patent Laws (full text); The Trade Mark Law (full text); The Copyright Law (full text); The Principal Mechanical Movements—illustrated by 150 small diagrams—of value to inventors and designers of mechanism; Medallion Portraits of Distinguished American Inventors; Valuable Tables relating to Steam, Electricity, Heat, Metals, Weights, and Measures.

Send by mail to any address on receipt of price, 25 cents.
MUNN & CO., Publishers, 361 Broadway, New York.

MALLEABLE AND FINE GRAY IRON ALSO STEEL CASTINGS FROM SPECIAL PATTERNS
THOMAS DEVLIN & CO. FINE TINNING, JAPANING AND PHISHING. LEHIGH AVE. & AMERICAN ST. PHILA.

\$525 Agent's profits per month. Will prove it or pay effort. New articles just out. A \$1.50 sample sent free. Try us. **ELECTROGRAPH CO.,** 28 Bond St., N. Y.

ELECTRICITY AND PLANT GROWING.—A paper by Prof. L. H. Bailey, Cornell University, describing and giving the results of a series of experiments upon the effect of electrical illumination upon the growth of plants. Contained in **SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 990 and 991.** Price 10 cents each. To be had at this office and from all news-dealers.

The United Autographic Register Co., 148-154 Monroe St. Chicago
REGISTERS LEASED at a cost of less than 2 cents per day.
OR SOLD at from \$15 to \$50, \$2000 in use. Made in 25 styles. Send for Circulars **BEWARE OF INFRINGEMENTS.**



"Improved Carpet Beater." It removes the dust effectually and destroys all mites and bugs. Patent right for sale. Address **F. T. Frost,** 1702 4th St., Wash'n, D. C.

SINTZ GAS ENGINE CO. GRAND RAPIDS, MICH., U. S. A.
 Manufacturers of the Sintz Stationary and Marine Gas and Gasoline Engines. Especially adapted for Boats and Electric Lighting. Runs with manufactured or natural gas—Boats and launches. Prices within the reach of all. Send for Catalogue. Mention this paper.



The Scientific American PUBLICATIONS FOR 1895.

The prices of the different publications in the United States, Canada, and Mexico are as follows:

RATES BY MAIL.

The Scientific American (weekly), one year	\$3.00
The Scientific American Supplement (weekly), one year	5.00
The Scientific American, Expert Edition in which is incorporated the Spanish Edition (monthly), one year	3.00
The Scientific American Architects and Builders Edition (monthly), one year	2.50
COMBINED RATES.	
The Scientific American and Supplement	\$7.00
The Scientific American and Architects and Builders Edition	5.00
The Scientific American, Supplement, and Architects and Builders Edition	9.00

Proportionate Rates for Six Months.
 This includes postage, which we pay. Remit by postal or express money order, or draft to order of **MUNN & CO., 361 Broadway, New York.**

The New Model No. 6 Remington Typewriter
 . . . A DEVELOPMENT—NOT AN EXPERIMENT.
MANY NOTABLE IMPROVEMENTS.
 Permanent Alignment, Improved Spacing Mechanism, Uniform and Easy Touch, Better Ribbon Movement, Improved Paper Feed, AND MANY OTHER USEFUL AND CONVENIENT DEVICES.



WYCKOFF, SEAMANS & BENEDICT, 327 Broadway, NEW YORK.

The Rembert Roller Compress Co. GALVESTON, TEXAS, hereby gives notice to the public and to the trade that it is the sole and exclusive owner of Letters Patent of the United States No. 441,022, issued November 18, 1890, to Henry Rembert:

"That the claims of this patent cover a method of baling cotton consisting of compressing the same progressively and accumulating the compressed fiber previous to its expansion in the form of a bale, which is subjected either during its accumulation or after to further pressure to admit of its being tied:
 "That as the exclusive owner of this process the Company is prepared and intends to maintain its sole right thereto and will vigorously and promptly prosecute all corporations, firms, persons or other parties in any manner practicing the same."

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. In use the world over, and recommended by water companies everywhere. Address for circular, **Backus Water Motor Co., Newark, N. J., U. S. A.**

SELF LUBRICATING Rotary Screw Ventilators
 which produce a Vacuum by Rotation.
 The only positive cure for Smoky Chimneys, Poor Draught and Ventilation.
 Adopted and used successfully on Private Residences, Greenhouses, Hotels, Breweries, Public Buildings, etc., etc.
E. G. Washburne & Co., Mfrs., 48 Cortlandt St., New York.
 Send for illustrated circular.



WOODEN TANKS.
 For Railroads, Mills and Manufactories. Builders of Steel Towers and Tanks. La. Red Cypress Wood Tanks a specialty.
W. E. CALDWELL CO., 217 E. Main Street, Louisville, Ky.

\$18 SAFE We Pay Freight. Address **ELGIN SAFE CO., ELGIN, ILL.**

"THE DENSMORE"
 "The World's Greatest Typewriter."
 It has the Most Conveniences and Runs the Easiest. Other manufacturers acknowledge its superiority by imitating, but not equaling, its essential features.
 The U. S. War Department adopted it in 1893, and has just renewed the contract FREE—Descriptive Pamphlet, with opinions from such leading concerns as the **CARNEGIE STEEL COMPANY, WHO USE 25 DENSMORES.**
DENSMORE TYPEWRITER CO., 202 Broadway, New York.



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

PATENTS
 MESSRS. MUNN & Co., Solicitors of Patents, have had nearly fifty years' continuous experience. Any one may quickly ascertain, free, whether an invention (probably is patentable) by writing to Munn & Co. Communications strictly confidential. A handbook of patents and how to obtain them sent free.



FREE IT COSTS YOU NOTHING
 THIS HIGH-GRADE \$60.00 MACHINE ABSOLUTELY FREE. No Misrepresentation. No Scheme. We mean just what we say. This machine is yours free. No such opportunity has ever before been offered. We shall sometimes these liberal terms for only a short time. Cut this out and write to-day. Sewing Machine Department, T. 697 **OXFORD MFG. CO., 342 Wash Ave., Chicago**

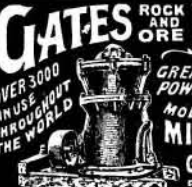


STEREOPTICONS. MAGIC LANTERNS AND ACCESSORIES. SEND FOR CATALOGUE TO CHAS BESELER MAKER 218 CENTRE ST. NEW YORK.

THE "MUNSON" TYPEWRITER
 This machine is an "evolution," the outgrowth of years of experience and the best results of scientific work. Its principles appeal at once to the educated mechanic. It is light, small, compact. Easily operated, with Universal Key Board.
INTERCHANGEABLE STEEL TYPE WHEEL, durable and easily kept in order. 30 keys, 30 characters. Weight, with carrying case, 16 pounds. Special wheels for different languages.
 Highest Medal Awarded, World's Fair, Chicago, 1893. Send for circular to **The Munson Typewriter Co., 171 E. Division Street, Chicago, Ill., U. S. A.**



GATES ROCK AND ORE BREAKERS
 OVER 3000 IN USE THROUGHOUT THE WORLD
 GREATER CAPACITY USING LESS POWER THAN ANY OTHER ON EARTH
 MODERN MINING MACHINERY OF EVERY DESCRIPTION
GATES IRON WORKS DEPT. T 50 S. CLINTON ST. CHICAGO.



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

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 GOVERNOUR MACHINE CO., Gouverneur, N. Y.



CUTS—Photo-zinc, half tone and wood. What do you need? **Indiana Illustrating Co., Indianapolis, Ind.**

INCUBATORS
 Self-Regulating Brooders. Most Perfect Machines. Best Material and Workmanship. Our Thermometer is so accurate that thermometer can be dispensed with. 15 breeds high-class poultry. Full stock poultry supplies. Send for large illustrated catalogue. Peerless Incubator & Brooder Co., 515 Ohio Street, CHICAGO, ILL.



MONITOR INCUBATOR
 Self Regulating. Large Illustrated 64 page catalogue for 4 cents in stamps. **MONITOR INCUBATOR CO.** The Best. 61 RACE STREET, BRISTOL, CONN.




FACTORY AT WHITESTONE FOR SALE (30 minutes from New York), with boilers, 15 horse-power engine, machinery, tools, etc. Price, \$5,000; terms, \$2,000 cash, balance on mortgage at 6 per cent., if desired. Located on L. I. R.R. and the Sound, affording cheap water freights. Very advantageous for any light manufacturing, such as metal work, novelties, hardware, etc. Lot 50x100, facing on two thoroughfares, 3-story brick building 30x30, with boiler and engine annex building. Address "FACTORY," P. O. Box 2718, New York City.

98c USE GRINDSTONES?
 If so, we can supply you. All sizes mounted and unmounted, always kept in stock. Remember, we make a specialty of selecting stones for all special purposes. Ask for catalogue.
THE CLEVELAND STONE CO. 2d Floor, Wilshire, Cleveland, O.



FOOT POWER MACHINERY
 Scroll Saws, Tools, Drills, Forges, etc. Send 4c for catalogue. **Wilkinson Co., 88 Randolph St., Chicago.**


KLIP BINDERS
 for Papers, Magazines, etc. Contents instantly removable. Adopted by U. S. Govt. and many libraries. Send 75c. for sample dozen. Covers to order.
H. H. BALLARD, 188, Pittsfield, Mass.



KEEP THE HEAD COOL.
 The Braided Wire Spring Pillow is Cool and Cleanly. Comfortable as down or feathers. Practically indestructible. Price, upholstered in fine hair: Adult's 20 x 28, \$3.50; Couch, 20 x 20, \$3.00; Child's, 14 x 22, \$2.50. Sent, express prepaid, on receipt of price. Address **Weston & Wells Mfg. Co., 112-115 Noble St., Phila., Pa.**



MORSE UNIVERSAL DRAUGHTING TABLE
 THE LARGEST AND MOST COMPLETE LINE OF DRAUGHTING ROOM FURNITURE MANUFACTURED BY **MORSE MACHINE CO. ROCHESTER, N.Y.**



A Valuable Book

THE SCIENTIFIC AMERICAN ALPHABETIC RECEIPTS, NOTES AND QUERIES
 12,500 Receipts. 708 Pages. Price \$5.
 Bound in Sheep, \$6. Half-Morocco, \$6.50.
 This splendid work contains a careful compilation of the most useful Receipts and Replies given in the Notes and Queries of correspondents 25 published in the Scientific American during the past fifty years; together with many valuable and important additions.
 Over Twelve Thousand selected Receipts are here collected; nearly every branch of the useful arts being represented. It is by far the most comprehensive volume of the kind ever placed before the public.
 The work may be regarded as the product of the studies and practical experience of the ablest chemists and workers in all parts of the world; the information given being of the highest value, arranged and condensed in concise form convenient for ready use.
 Almost every inquiry that can be thought of, relating to formulae used in the various manufacturing industries, will here be found answered.
 Instructions for working many different processes in the arts are given.
 Those who are engaged in any branch of industry probably will find in this book much that is of practical value in their respective callings.
 Those who are in search of independent business or employment, relating to the home manufacture of sample articles, will find in it hundreds of most excellent suggestions.
 Send for Descriptive Circular.
MUNN & CO., Publishers, SCIENTIFIC AMERICAN OFFICE, 361 Broadway, New York.

