

ENGINEA FOOT MACHINE SHOP OUTFITS TOOLS AND SUPPLIES: ARREAD AND SUPPLIES: ARREAD AND SUPPLIES: ARREAD AND SUPPLIES AND

ELECTRO MOTOR, SIMPLE, HOW TO make.—By G. M. Hopkins. Description of a small electric motor devised and constructed with a view to assisting amateurs to make a motor which might be driven with advantage by a current derived from a battery, and which would have sufficient power to operate a foot lather or any machine requiring not over one man power. With 11 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 641. Price 10 cents. To be had at this office and from all newsdealers.

WORKS LIKE LIGHTNING

riveting together various articles of Hardware, Mechanics' Tools, Bicycle Chains, Sewing Machine Attachments. Agricultural Implements, etc., at the rate of 1,000 blows per minute. The famous

ELASTIC ROTARY BLOW RIVETING MACHINE

has no equal of its kind and is a boon to every workshop and factory in the world. Six sizes 1-16 to ¾ inch.

The F. B. Shuster Co. NEW HAVEN, CONN.

THE 21/2 H.P. WEBER JUNIOR PUMPER has a capacity of 50 gallons 125 feet and 100 gallons gained 20 men pumping water. All complete ready to attach to pump. Uses gasoline in proposed 100 pumping in

CONTROL OF FIRE.—VALUABLE PA-

per on fire extinguishment. SCIENTIFIC AMERICAN SUPPLEMENT 1134. Price 10 cents. For sale by Munn & Co, and all newsdealers.



and GAS Engine burns KEROSENE cheaperand safer than gasocheaperand safer than gaso-line. Automatic, simple, re-liable. No electric battery or fiame used. Perfect.regu-lation. Belted or directly coupled to dynamo for elec-tric lighting, charging stor-age batteries, pumping and all power purposes. Send for Catalogue.

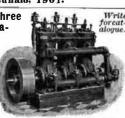
A. MIETZ, 128-138 Mort St., New

Awarded Gold Medal Pan-American Exposition. Buffalo, 1901.

The "Wolverine" Three Cylinder Gasoline Ma-Tine Engine.

The only reversing and self-starting gasoline engine on the market. Lightest engine for the power built. Practically no vibration. Absolutely safe. Single, double and triple marine and stationary motors from \$\frac{1}{2}\text{ to Silve No. 1}\text{ motors from \$\frac{1}{2}\text{ motors from \$\frac{1}\text{ motors from \$\frac{1}{2}\text{ motors from \$\frac{1}{2}\text{ motors from

MOTOR WORKS, Grand Rapids, Mich.



GERE GASOLINE ENGINES

SIMPLEST BOATE THE BOATE CABINATION BOATE CABINATION BOATE CABINATION BOAT FRANCE GEOMETRY VACUATION WAS GRAND RAPIDS MICHIGAN.

ACETYLENE GAS AND CARBIDE OF Calcium.—All about the new illuminant, its qualities, chemistry, pressure of liquefaction, its probable future, experiments performed with it. A most valuable series of articles, giving in complete form the particulars of this subject. Details of furnaces for making the carbide, gas generators, gasometers, burners, etc. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 998, 1004, 1007, 1012, 1014, 1015, 1016, 1022, 1035, 1035, 1057, 1064, 1071, 1072, 1082, 1035, 1035, 1037, 1057, 1064, 1071, 1072, 1082, 1149, 1150, 1203, 1204, 1206 and 1209, Price 10 ents each, by mail, from this office, and all news dealers.

NEW BINOCULAR.



(The Triëder.) Small as an opera glass. More powerful than the largest field glass. Send for Circulars.

QUEEN & CO. Optical and Scientific Instru-ment Works,

1010 Chestnut Street, NEW YORK: 59 Fifth Ave. PHILADELPHIA, PA.

AUTOMATIC AMGO HYDROMETERY
APPEL-MURDOCH COMPANY, Chicago, III.

For Heavy Continuous Work

every machine shop will commend our Power Pipe Threading and Cutting Machine. Cones are central over machine, equalizing the weight. Within the cones are compound gears giving six changes of speed. Gears require no extra space, and are protected from dust or accident. Chasers can be opened, threaded pipe removed, another inserted and cut without stopping machine. 38 Send for Catalegue.

THE MERRELL MFG. CO.
501 Curtiss Street, TOLEDO, OHIO.

Now is the time to subscribe to the SCIENTIFIC AMERICAN

for the year 1902 Subscription Price, - - \$3 a Year 3 Months Trial, 50 cents



 Wire stretcher, M. D. Ferrin.
 689,174

 Wire tightener, L. F. Tarbell.
 689,333

 Wood impregnating apparatus, G. F. Lebioda 689,317
 689,317

 Wood, preserving, O. Chanute.
 688,932

 Woodworking machine, R. Schleicher
 689,927

 Wrapper, reversible mailing, G. Schutes
 689,131

 Wrench, J. W. Suidter
 688,896

 Zinc from lead, removing, Barton & McGhie
 689,275

 Zither, lyre, V. Eckhart
 689,297

DESIGNS

DESIGNS.	
Bottle, F. F. Garrard	35,443
Buckle, B. F. Hecht	35,441
Button, cuff, M. Wetzler	35,440
Candelabrum, S. W. Babbitt	
Clothespin, A. Smith	35,442
Drill bit, Getchell & Jackson	35,447
Fencing, wire, Dwiggins & Swank	35,461
Hose rack frame, E. Cliff	
Insulator, electric wire, T. F. King	35,462
Milling machine frame, J. Becker	35,448
Milling machine upright, horizontal, J. Becker	35,449
Range, portable, T. I. Rankin35,454,	35,455
Stove, cooking, T. I. Rankin35,456,	35,457
Stove, heating, T. I. Rankin35,458 to	35,460
Tool, hand, J. L. Clements	35,446
Toy hoe and rake, H. T. Kingsbury	35,444 35,445
Toy rake head, H. T. Kingsbury	
Velvet smoother, H. Kendstrom	
Wrench, hub, A. P. Smythe	30,400

TRADE MARKS.

LABELS. Greene R,849

"Mermaid Genuine Pain Expeller," for a medical preparation, Mermaid Genuine Pain Expeller Co. 8,851

"Nature's Remedies," for medical preparations, Warner Medical Co. 8,852

"Pepto-Lac Improved Kumiss," for kumiss,
Acme Pharmaceutical Co. 8,845

"Rheumaticura," for a medicine, Rheumaticura Co. 8,853

PRINTS.

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 10 cents, provided the name and number of the patent desired and the date be given. Address Munn & Co., 361 Broadway, New York

given. Address Munn & Co., 361 Broadway, Nev York.

Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list. For terms and further particular address Munn & Co., 361 Broadway, New York.

NEW BOOKS.

Modern Eloquence. A Library of Famous After-Dinner Speeches, Classic and Popular Lectures, the Best Occasional Addresses, Anecdotes and Illustrations. Edited by Hon. Thomas B. Reed, editor-in-chier, assisted by Hon. Justin McCarthy, M.P., Rossiter Johnson, Albert Ellery Bergh. Philadelphia: John D. Morris & Company, 1101 Chestnut Street. 1901. 10 volumes, 6% x 10 inches. 4,500 pages.

Oratory is far from a lost art, and we have to-day some of the most brilliant and witty speakers that have ever graced public occasions, but the oratory of the century just passed has also to be considered, and these famous speeches, addresses and lectures are worthy of all attention. The editors of the sumptuous volumes before us have worthily performed a singularly difficult task. They have sat down soberly to collect and publish in enduring form the ablest and most representative oratory of modern time. No expe riments have been tried, and whatever is in the library is of proved value and interest. It includes after-dinner speeches, famous lectures, addresses, stories, anecdotes, reminiscences and repartee of banquet hall and legislative forum. Everything which is used is used in its entirety. The "Committee of Selection" includes well-known names and the editors are of world-wide reputation. The books are specially well made and the set is an imposing

Drying by Means of Air and Steam. By E. Hausbrand. London: Scott, Greenwood & Co. 1901. 16mo. Pp. 72, folding plates. Price \$2.

The literature upon drying is very scant, so that the present treatise with its valuable tables and diagrams will be most warmly welcomed. The author has furnished the means of ascertaining the consumption of air and heat in any drying apparatus.



Williams' Shaving Stick, - 25c.
Yankee Shaving Soap, (Round or Square), 10c.
Luxury Shaving Tablet, - 25c.
Swiss Violet Shaving Cream, - 50c.
Williams' Shaving Soap (Barbers'), 6 Round
Cakes, 1 lb., 40c. Exquisite also for toilet.
(Trial Size) Williams' Shaving Tablet for 2c. stamp
Stick "10c."

The only firm in the world making a specialty of SHAVING Soaps

THE J. B. WILLIAMS CO., Glastonbury, Ct.

ROTARY ENGINES.—ARTICLES ON this type of engine, giving many details and illustra-tions, are contained in SUPPLEMENT Nos. 1158, 1186, 1193 and 13409. Price 10 cents each. For sale by Munn & Co. and all newsdealers.

A TRUSGOTT BOAT

Simple, Safe, Reliable, Speedy.



Built either cabined or open in sizes from 16 to 100 feet n length. For catalog giving full information write

Truscott Boat Mfg. Co., ST. JOSEPH, MICH.



MATCH FACTORY.—DESCRIPTION of an English factory. SCIENTIFIC AMERICAN SUP-PLEMENT 1113. Price 10 cents. For sale by Munn & Co. and all newsdealers.



GUNSMITHS, TOOL MAKERS, EXPERI-MENTAL & REPAIR WORK, ETC.

From 9-in. to 13-in. swing. Arranged for Steam or Foot Power, Velocipede or Stand-up Treadle. Send for Catalogue. W. F. & JNO. BARNES CO. 1999 Ruby St., ROCKFORD, ILL.

ELEVEN-INCH SCREW CUTTING LATHE

For foot or power as wanted. Has power cross feed and com-pound rest. A strictly high grade. modern tool. Ask us for print-ed matter. B. F. BARNES COMPANY, Rockford, III.

The Deadly Faucet! From it comes the germ-laden vater carrying with it all the ele-nents of disease, but if you use The Berkefeld Filter



NICKEL Electro-Plating Apparatus and Material, Hanson & Van Winkle

Co., Newark. N. J. 136 Liberty St., N. Y. 30 & 32 S. Canal St., Chicago.

Patents, Trade Marks, COPYRIGHTS, etc.,
Address MUNN & CO., Solicitors
of Patents.
Office of the SCIENTIFIC AMERICAN
S61 Broadway, New York.
Branch Office: 625 F St., Washington, D C.
Hand-book Sent Free on Application.

PRACTICAL X-RAY WORK, By Frank T. Addyman, B.Sc., F.I.C. London: Scott, Greenwood & Co. 1901. 12mo. Pp. 207. Price \$4.

The author just remarks in his preface that he encountered two difficulties in trying to give a description of X-ray work which would be of use to medical men. The first was that some, not all, are well acquainted with the elements of electrical science, and the second is that the use of a Crookes tube cannot be learned by reading a book. The author has produced most remarkable treatise on the subject, every branch and detail being considered. With the aid of this book medical men should have no difficulty in using the X-rays with good re suits. The radiographs which illustrate the text are numerous and of excellent quality.

Wireless Telegraphy. A Popular Exposition. By W. de Tunzelmann, B.Sc. London: Office of Knowledge. 1901. 16mo. Pp. 104. Price 60 cents,

The author's object in presenting this little treatise is two-fold. In the first place he has attempted to set forth the history and practice of wireless telegraphy in a manner adapted to any reader who is interested in knowing some-thing of the historical development and pracworking of electric telegraphy without the aid of connecting wires to guide the message between the communicating stations. In the second place, he has attempted the far more difficult task of providing readers who know little or nothing of the electrical theory with the means of knowing something about the physical facts upon which the practice of etheric telegraphy is based.

METAL-WORKING TOOLS AND THEIR USE, By Percival Marshall. London: Dawbarn & Ward, Ltd. 1901. 12mo. Pp. 73. Price 20 cents.

A useful little handbook describing in detail the principal metal-working tools with especial reference to the use of amateurs.

KEY TO THE CLASSIFICATION OF THE PAT-ENT SPECIFICATIONS OF GERMANY, AUS-TRIA, DENMARK AND NORWAY IN THE LIBRARY OF THE (BRITISH) PATENT OFFICE. London: The Patent Office. 1901. 18mo. Pp. 74. Price 6d.

This little volume will greatly assist those interested in making searches through the specifications of these countries.

THE TELEPHONE SYSTEM OF THE BRITISH POST OFFICE. By T. E. Herbert, London and New York: The Macmillan Company, Whittaker & Co. 1901. 16mo. Pp. 218. Price \$1.

Those who are interested in the British telephone system will find in this work a very thorough and important treatise on the subject, written by an English officer of the Postal Telegraphs.

SUBJECT LIST OF WORKS ON CHEMISTRY
AND CHEMICAL TECHNOLOGY IN THE
LIBRARY OF THE (BRITISH) PATENT
OFFICE. London: The Patent Office.
1901. 16mo. Pp. 105. Price 6d.

An admirable bibliography of chemical literature which is sure to prove of the greatest possible value, not only to those interested in patents, but in general chemical literature. It is, of course, nothing like as extensive as the work by H. C. Bolton, published by the Smithsonian Institution, but at the same time for a brief bibliography it is excellent.

FRUIT HARVESTING, STORING, AND MARKET-ING. Making a Practical Guide to the Picking, Sorting, Packing, and Marketing of Fruit. By F. A. Waugh. New York: Orange Judd Company. 1901. 16mo. Pp. 224. Price \$1.

The last twenty years has shown a remarkable development in agricultural literature, the books which are offered for sale being emi-nently practical. The present book is no exception to this rule. It tells the fruit grower how not only to grow the fruit, but also how to sell it. The second of these problems is fully as difficult as the first, but with the aid of Mr. Waugh's treatise the task is greatly simplified. The author has a national reputation as a borticulturist.

CURRENCY AND BANKING IN THE PROVINCE OF MASSACHUSETTS BAY. By Andrew McFarland Davis. Two vols. Part I., Currency. Part II., Banking. 8vo. Pp. 473, plates 332. Price \$4.

The subject is one which will interest all the water will be thoroughly purified in passing through the cylinders of Infusorial Earth which retains every atom of solid matter. Easy to clean. Yields a callon of pure water in 4 minutes.

BERKEFELD FILTER CO., 4 Cedar St., New York. reproduced from the originals. It is a work which no historical library can afford to be without. The author has delved deep into the archives and statutes and has produced a book of sterling value, and withal entertaining.

HANDBOOK ON PETROLEUM. For Inspectors under the Petroleum Acts. By Capt. J. H. Thomson and Boverton Redwood. London: Charles Griffin & Company, Ltd. Philadelphia: J. B. Lippincott Company. 1901. 8vo. Pp. 298. Price \$3.

While our laws relative to the transportation and storage of petroleum are different from English laws, at the same time it will prove of great value to those engaged in the storage, transportation, distribution and industrial use of petroleum and its products and calcium carbide, with suggestions on the construction and use of mineral oil lamps.