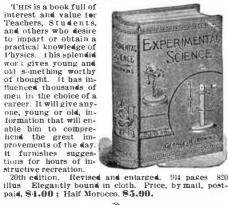
Jaluable Books.

EXPERIMENTAL SCIENCE.

T'HIS is a book full of interest and value for Teachers, Students, and others who desire to impart or obtain a practical knowledge of Physics. This splendid work gives volum and work gives young and old something worthy of thought. It has in-fluenced thousands of men in the choice of a career. It will give anyone, young or old, in-formation that will en-



Liquid Air and the Liquetaction of Gases.

This book contains the full theory of the subject. I gives the entire history of the Liquefaction of Gases from the earliesttime to the present, and contains an illustrated description of all the experiments that have excited the wonder of audiences all over the country. It is a logical explanation and application of the principles of liquefaction, a history of the theory, discovery and manufacture of liquid air. A book that renders simple one of the most perplexing chemical problems of the century. Startling developments illustrated by actual experiments. It is not only a work of scientific Woodworking machine feeding device, J. R. Thomas.
Woven fabric, Gilbert & Shepard.
Wrench. See Monkey wrench. Scry he wrench.
Wrist pins. device for truing, T. Corwin.
Writing and translating, instrument for secret,
J. W. Follansbee.
Zinc, processof and apparatus for making chlorid
of, H. K. Hess. interest and authority, but is intended for the general reader, being written in a popular style-easily understood by everyone.

By Prof. T. O'CONOR SLOANE. 365 Pages. With many Illustrations, Price §2.50.

A Complete Electrical Library.

By PROF. T. O'CONOR SLOANE.



An inexpensive library of the best books on Electricity. Put up in a neat folding box, as shown in cut. For the student the amateur, the workshop, the electrical engineer, schools and colleges. Comprising five books, as follows:

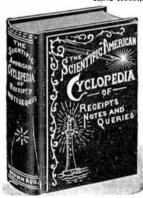
Arithmetic of Electricity 138 pages, . . . \$1.00 pages, \$1.00 How to Become a Successful Electrician, 189 pages, . . . \$1.00

standard Flectrical 100
Standard Flectrical 100
Standard Flectrical 100
tionary, 622 pages. \$3.00
Five volumes, 1,300 pages, Electricity Simplified. 185
and over 150 illustrations.
A valuable and indispensable addition to every library.

Our Great Special Offer.—We will send prepaid the above five volumes, handsomely bound in blue cloth, with silver lettering, and inclosed in a near folding box, as shown in the illustration, at the Special Reduced Price of \$5.00 for the complete set. The regular price of the five volumes is \$7.00.

THE SCIENTIFIC AMERICAN Cyclopedia of Receipts, Notes and Queries.

Edited by ALBERT A. HOPKINS. 12,500 Receipts. 708 Pages.



ts. 708 Pages.

This splendid work contains a careful compilation of the most useful Receipts and Replies given in the Notes and Queries of corresiondenst as published in the SCIENTIFIC AMERICAN during the past fifty years; together with many valuable and important ad ditions. 4 ver 12.000 selected; 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.

Price \$5 in cloth; \$6 in sheep; \$6.50 in half morocco; postpaid.

Gas, Gasoline, and Oil Vapor Engines.

The Only American Book on the Subject.

A book designed for the general information of everyone interested in this new and popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. The book treats of the theory and bractice of Gas, Gasoline, and Oil Engines, as designed and manufactured in the United States. It also contains chapters on Horseless Ve-hicles, Electric Lighting, Marine Propulsion, etc.



By GARDNER D. HISCOX, M.E. 270 Handsome Engrav ings. Large Octavo, 365 Pages. Price \$2.50. Full descriptive circulars of above books will be mailed free upon application.

MUNN & CO., Publishers, 361 BROADWAY, NEW YORK.

1		
Н	Tile structure F I O Wedsmorth 640 940	C40 949
П	The structure, F D. O. Wansworth	C40 014
П	Timer's are pot, J. S. Hull	040,914
П	Tire, elastic, E. M. Birasali	11,863
Ш	Tire for vehicles, shielded rubber, R. Mitchell, Jr.	640,927
н	Tire plug, F. B. Parks	641,252
Н	Tire, pneumatic rubber, F. A. Seiberling	641, 153
	Tire, pneumatic, J. A. S. Simonson	640.821
	Tire wheel () 1 M Aucora	6301851
Л	Tile structure, F. L. O. Wadsworth	4:41 941
34	(Prook clouper C. W. Durgles	641 925
Н	Track cleaner, G. W. Ruggies	041,200
. 1	Traction engine. R. Russell	640,900
П	Trip. See Animal trap. Hog trap. Steam trap.	
П	Tree extractor and carrier, Dunbar & Miller	640.889
П	Trolley wheel, G. B. Raum, Jr.	640.810
П	Truck elevator G. J. Peacock	640.942
П	Trolley wheel, G. B. Raum, Jr. Truck, elevator, G. J. Peacock. Tub. See Convertible tub.	010,012
П	The sleen was W. S. Williatt	641.000
П	Tube cleaner, W. S. Elliott. Tube ends, tool for bushing metallic, E. T. Green-	041.0.72
ч	Tube ends, tool for bushing dietame, E. I. Green-	210 710
Н	neid	640.459
н	field. Tubing machine, hydraulic, F. Deming Tubing manufacturing machine, V. Royle Turbine, steam, J. Burgum.	640.881
П	Tubing manufacturing machine, V. Royle	641.041
П	Turbine, steam, J. Burgum	641,074
	Turnstile, A. P. Dodge	640.998
П	Type bars for printing matrix bar for machines	.,,,,,,,,
Н	for making k. W. Dright	C48 90"
1	for making, F. E. Bright. Umbreila holder. Dawson & Beyerback	044.004
П	Cimbrella notwer. Dawson & neyerback	040.000
П	Umbrella runner, N. D. Ingram	641.114
ч	Valve, C. Gulland	641,009
П	Valve, inflation, F. S. Roney	640.815
П	Valve, pressure regulating, G. Kettenring	641.120
П	Valve, slide, I. N. Moore	641.132
П	Unbrela runner, N. D. Ingram. Valve, C. Gulland. Valve, Inflation, E. S. Roney. Valve, inflation, E. S. Roney. Valve, pressure regulating, G. Kettenring. Valve, Stide, I. N. Moore. Valve, vessel, C. A. Borein.	641 185
-	Vat. See Scalding vat.	071, 100
П	vat. See Scalating vat.	
И	Vehicle brake. A. L. Parker Vehicle, electric. E. A. Sperry	641, 146
	Vehicle, electric, E. A. Sperry	640.968
	Venicle Iootooard, H. Dhuse	040,885
ч	Vehicle footboard, J. W. Eisenhuth	640.891
9	Vehicle seat fastener Coss & Parshail	640 877
П	Volocinada staaring hand C. I. Thompson	640.834
М	Vanding machine coin operated 1 / Sibler	640 963
1	Unger broke C Verrieu	640 021
1	Wagon brake, G. Newton.	040.301
П	Wall covering, metallic, G. Russell	641.237
П	Washing machine, J. W. Thomas	(40.975
	Water closet disin fecting apparatus, W. Ruth ven	641,238
П	Water motor, H. A. Wise	640.98.2
ч	Water raising apparatus, L. H. Woolley	641 251
П	Water tube hoiler (M Davis	640 879
Н	Water tube boiler T krench	6.01 005
П	Nave muter C F A Poell	641 929
П	Vehicle foorboard, J. W. Eisenhuth vehicle seat fastener, Coss & Parshail velocipede steering head, G. L. Thompson, vending machine, coin operated, J. T. Sibley Wagon brake, G. Newton, Wall covering, metallic, G. Russell Washing machine, J. W. Thomas, Ware closet dism feeting apparatus, W. Ruth ven Water motor, H. A. Wise, Water tasing apparatus, L. H. Woolley, Water tube boiler, G. M. Davis, Water tube boiler, T. French, Wave motor, C. F. A. Roell, Weather strip, door, A. G. Ogan,	041,200
Л	Weather strip. door. A. G. Ogan Web and sheet feeding and printing machine, F.	641.1.59
	Web and sheet feeding and printing machine, F.	
П	Meisel	641.216
Ш	Weevil, etc., machine for destroying cotton boll.	
i	F. Strobach	640,829
2	Wheel See Trolley wheel	
1	Wheel for bicycles or other vehicles, E. A. Cross- ley	
l	low	611 095
J	157h-sile -si6 -lu-ing T seek # flowed sig	041.000
1	winsite, self playing, Leech & Couchois	641,025
.	Wind and water motor, R. E. Hardaway	040,901
	Wmamil, J. O'Toole	641,143
1	Windmill tower. Woodmanse & Auc	641,250
١	Window frame and sash, A. Rasner	641.037
,	Window screen, R. M. Spencer	641.242
,	Wire manufacture of seamless h' E Rodman	640 866
3	Wood working muching Smith & For	6.41 1.50
	Wordmonking machine fooding desired I D	041,199
ı	Wind and water motor, R. E. Hardaway. Windmill, J. O'Toole. Windmill tower, Woodmanse & Aue. Window frame and sash, A. Risner. Window screen, R. M. Spencer. Wire manufacture of seamless, F. E. Bodman. Wood working machine, Smith & Fox. Woodworking machine feeding device, J. R. Thomas.	010 000
,	Thomas	640,833
1	Woven fabric, Gilbert & Shepard	641,007

	DESIGNS.	
١	Advertising frame, S. W. Perry	
d	Badge, J. C. Derby	32.102
7	Bottle or jar, C. C. Dula	32,086
1	Bottle stopper, wooden sprinkling, W. C. Estes	32,085
L	Brick, J. N. Quinn	32.097
3	Buffet, J. H. Horne.	32,098
•	Button link bar. cuff, C. H. Allen	32.080
1	Button shoe. collar. T. I. Smith	
ч	Curtain. P. MacCaffray32,100,	32,101
١,	Fire escape cleat, M. W. Hoglund	33,094
1	Hydrocarbon burner, H. Merkel	32.091
П	Hydrocarbon burners, inner tube member for,	
	Sherman & Harms	32.032
)	Knife, seamstress', J. Conley	32.083
)	Lamp body, D. S. Williams Lantern attachment, magic, J. G. Brown	32.030
j	Reamer, pitch, M. Redlinger, Jr	32,000
	Ring or similar article, M. Gebhardt	04,000
2	Sash fastener, J. T. McMahon.	32,019
í	Shears, member for pairs of, J. J. Alvord	12.090
1	Spoon, fork, or knife handle, C. C. Schmitt	32 082
i	Toy fan blade, W. Morgan	
	Valve casing, inflation, E. Childs	
3	Violin body, E. A. R. Kitchen	32.088
ı	to the coup, as an as another than the coup of the cou	0.4,000

TRADE MARKS.	
Belting, certain named leather, Mayer & Com-	01.040
pany	34,018
Canned pumpkin, Van Camp Packing Company	$\frac{34.023}{34,028}$
Dress facings, Hay's Waterproof Binding Com-	34.014
pany	34,029
Gas Machine Improvement Company	34,037
Construction Company	34,024
Kelly Mercantile Company Medicine or remedies, hog cholera, American Pro-	34,025
prietary Medicine Company	34,019
Opium antidote, Harrison & Roth Company Paints, varnishes, and oils, Standard Varnish	34,021
Works. Peanuts in packages, G. Boyd & Sons.	$\frac{34.034}{34.027}$
Rubber footwear, certain named, Monarch Rub-	
ber Company	34.017 34.036
Sal soda, Church & Dwight Company Shoe polish and leather dressing, "World" Polish	34.030
Manufacturing Company	34,033
Spool cotton, James Chadwick & Brother	34,032 34,015
Surface finishing materials, certain, Muralo Com-	34,035
Tobacco, Bloch Brothers Tobacco Company Toilet preparations. P. A. Houghton	34,031
Tonic. nerve, S. R. Feil Company Trimmings, tailors', Doblin & Schamberg	
_	
IADELC	

LABELS.	
"Cuban Tonic," for a tonic, J. C. Wilson "Diamond Cleaner and Polish," for cleansing and	7,292
Polishing compound, Diamond Cleaner and	7.297
"Dr. Hood's Baking Powder," for baking powder, J. U. O'Meara	7 201
"Dr. J. C. Hood's May Blossom," for a medicine, J. C. Hood. "Fennel Hair Tonic," for hair tonic. W. F. A.	2 900
"Fennel Hair Tonic," for hair tonic. W. F. A.	1,430
Kirsch	7,293
packing, B. W. Goodsell	7.290
Werthern	7,295
"Oyl-lne," for a liniment, J. W. Van Winkle	7,294

PRINTS.

"K. W. Rosette," for electrical goods, Bryant Electric Company. 194
"Kenney Speedy Relief Company," for a medicine,
W. F. Kenney. 196
"Washington State Souvenir Cards," for playing cards, C. B. Strong. 195

A printed copy of the specification and drawing of any patent in the foregoing list or any patent in print issued since 1843, will be furnished from this office for Beents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 331 Broadway, New York. Special rates will be given where a large number of copies are desired at one time.

Canadian parents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are simple, at a cost of \$40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 351 Broadway, New York. Other foreign patents may also be obtained.

STEEL PENS



WYCKOFF, SEAMANS & BENEDICT, 327 Broadway, New York.



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge, in the

Scientific American.

MUNN & CO. 361 Broadway, New York

The Most Durable Steel Pens Works, Camden, N. J. THE ESTERBROOK STEEL PEN CO. 26 John St., New York,



FOR STEREOPTICONS AND SLIDES Moving Picture Machines and Films, write Williams, Brown & Earle, 920 Chestnut St., Philadelphia, Pa



NOVELTIES & PATENTED ARTICLES Manufactured by Contract. Punching Dies, Special Machinery. E. Konigslow & Bro., 181 Seneca St., Cleveland, O.

D'AMOUR & LITTLEDALE MACHINE CO. 130 WORTH ST. NEW YORK. Machinery, Tools, Patterns, Models.

INVENTIONS PERFECTED. PARSELL & WEED, 129-131 West 31st St., New York.

Experimental & Model Work Cir. & advice free. Wm. Gardam & Son, 45-51 Rose St., N. Y

GRINDING MILLS FOR ALL PURPOSES. Bogardus Patent Universal Eccentric Mill. Address J. S. & G. F. SIMPSON, 28 Rodney Street, Brooklyn, N. Y.

RARE CHANCE for investment, Canada Patent No. 64,179, Dated October 5, 1899. Great seller in United States, Write for particulars, ALLEN GLENN, Scrautou, lowa.

Salay Sure and we will show you how to make \$3 a day absolutely sure: we the locality where you live. Send us your address and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will explain the business fully; remember we murantage and we will be a supplied to the business fully in the business full in the



Safe, Reliable and fully guaranteed.

PIERCE ENGINE CO., 17 N. 17th Street, Racine, Wis,

CLUB MEN TRAIN.

Several members of a New York Club describing a recent trip to Chicago on one of the New York Central's twenty-four hour trains, expressed the opinion that this service furnished all the accommodations of a firstclass club, with the added advantage of the finest landscapes in the country, and an op-portunity for the practical study of history and geography that is unsurpassed.

A copy of "America's Great Resorts," will be sent free, postpaid, on receipt of a l-cent stame, by George H. Daniels, General Passenger Agent, Grand Central Station, New York.

Automobiles -

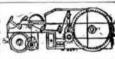
devoted mainly to illustrations and detailed descriptions of various types of horseless vehicles. This issue also contains an article on the mechanics of the bicycle and detailed drawings of an automobile tricycle. Price 10 cents.

The following copies of the SCIENTIFIC AMER-ICAN SUPPLEMENT give many details, of Automobiles of different types, with many illustrations of the vehicles, motors, boilers, etc. The series make a very valuable treatise on the subject. The numbers are: 732, 979, 993, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1075, 1078, 1080, 1082, 1083, 1099, 1100, 1113, 1122, 1178, 1195, 1199, 1206, 1210. Supplement No. 1229 contains a highly interesting article giving full data as to operating costs of horse and electric delivery wagons in New York City. Price 10 cents each, by mait. For sale by all newsdealers or address

MUNN & CO. Publishers, 361 BROADWAY, NEW YORK.

For Sale Steam Engine built by the Watts Campbell Company, of Newark, N.J. Engine consists of two horizontal pin. The cylinders are 28 io, bore, 60 in. stroke, Belt wheel is 26 ft. dia. by 114 in. face. Gross weight is about 225,000 bs. Can be seen in operation now; to The Clark Thread Co., P. O. Box 154, Newark, N. J.

FOR SALE OR ROYALTY. Patent Right No. 615.537. The most complete street Sweeper ever invented. Staters and selects the fine from the coarse. Dutless simple and durable. A fortune for the right man or a company. Address A. C. A. DUPUY, 1702 La Harpe St., New Orleans, La.



GAS & GASOLINE ENGINES

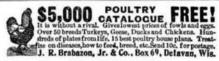


🤏 Acetylene Burners. Samples, ¼ to 1 foot, 25c. each.

A new burner for STEREOPTICONS.

Highest C. P. possible.









BABBITT METALS.—SIX IMPORTANT formulas. SCIENTIFIC AMERICAN SUPPLEMENT 1123. Price 10 cents. For sale by Munn & Co. and all newsdealers. Sens for 1897 catalogue.

