#### NEW BOOKS, ETC.

Subject List of Works on Photog-RAPHY AND THE ALLIED ARTS AND SCIENCES IN THE LIBRARY OF THE PATENT OFFICE. London: Patent Office Library Series, No. 2. Bibliographical Series, No. 1. 1900. 18mo. Pp. 62. Price 20 cents.

A most valuable little book worthy of a considerable sale, the arrangement is admirable.

THE AMATEUR'S PRACTICAL GARDEN BOOK. By C. E. Hunn and L. H, Bailey. New York: The Macmillan Company. London: Macmillan & Company, Limited. 1900. Pp. 250. Price \$1.

A volume of the "Garden Craft Series." It is a capi tal book filled with exactly the information one is always wanting to know, and it will give valuable points even on such subjects as watering plants. Both fruit and flower

MODERN HOUSE PLANS FOR EVERY-BODY. For Village and Country Residences, costing from \$250 to \$8,000, including full descriptions and estimates in detail of materials, labor, cost. and many practical suggestions. By S. B. Reed, architect. New York: Orange Judd Company. 1900. Illustrated, 12mo. Pp. 243. Price \$1.

To builders this work will be valuable as a handbook of reference, and to those who intend to build a home it will prove useful.

THE GAS ENGINE HANDBOOK. A Manual of Useful Information for the Designer and Engineer. By E. W. Roberts, M. E. Cincinnati, Ohio: The Gas Engine Publishing Company. 1900. 18mo. Pp. 220.

The book deals with American practice and is filled with valuable formulas and methods of determining mechanisms and propositions. It will prove of value to those who may have other books on the subject.

FIELD TESTING FOR GOLD AND SILVER, A Practical Manual for Prospectors and Miners. By W. Hamilton Mer-ritt, F.G.S. London: Crosby Lockwood & Son. New York: D. Van 1900. 18mo. Nostrand Company. Pp. 144. Price \$1.50.

The more intelligent is the prospector in his line of work the greater chance of success he will have. There is no business where exact science is of more value; tories of electricity. 2. What per cent of the power of a Much of the literature upon the subject is worthless, but steam engine would a hot air engine develop, both using the present handy volume is one we can commend.

MODERN COMPOUNDING AND RECTIFY ING. By Charles Norton. Chicago: Foote & Solomon. Pp. 89. Price \$2.50 **190**0.

There are many secrets in the distiller's business and many of them are given away in this book, which contains many practical formulas for producing all kinds cordials, etc. It also deals with the blending and imitating of various liquors.

FLEMENTARY PHYSICS FOR SEC-ONDARY SCHOOLS. By Charles Burton Thwing, Ph.D., (Bonn). Boston: Benjamin H. Sanborn & Company 1900. Pp. 371.

Prof. Thwing has prepared a text-book which occupies a unique position. It is not too elementary, nor is it too advanced for the usual secondary school. The author tells us in his preface that he has endeavored to do away with those "limitations under which teachers work, both as to specific preparation for the work of teaching physics and still more as to material equip-How well he has succeeded can be determined only by those who bave practically used his work in the class-room. From the scientific standpoint, at least, the book certainly leaves nothing to be desired.

DYNAMOMETERS AND THE MEASURE-MENT OF POWER. By John J. Fla-ther, Ph. B., M. M. E. Second Edition. Revised and Enlarged. New York: John Wiley & Sons. London: Chap-man & Hall, Limited. 1900. Pp. 394. 12mo. Price \$3.

The author has presented in convenient form for the use of technical students and engineers a description of the construction and principles of action of the various types of d namometer employed in the measurement of

THE WHY OF GRAVITY. By J. A. Allen. Alwington, Kingston, Canada. 1900. Pp. 34.

Mr. Allen's little treatise, running, as he himself adprobably not meet with the approval of scientists. But nevertheless it deserves attention for its straightforwardness and its radical independence of thought.

RESULTS OF RAIN, RIVER, AND EVAP-ORATION OBSERVATIONS MADE IN NEW SOUTH WALES DURING 1898. With Maps and Diagrams. By H. C. Russell, Government Astronomer. 1900. Published by authority of Her Majesty's Government in New South Wales. Octavo. Pp. 235.

berghei Graz (Oesterreich). Author's Edition.

# Business and Personal.

Marine Iron Works. Chicago. Catalogue free. For hoisting engines. J. S. Mundy, Newark, N. J. "U. S." Metal Polish. Indianapolis. Samples free. Yankee Notions. Waterbury Button Co., Waterb'y, Ct. any new article. Facilities excellent.

ood seller and retail \$1. "X," Box 773, New York. Most durable. convenient Metal Workers' Crayon is Special and Automatic Machines built to drawings on of flame, if the magnet is weaker. contract. The Garvin Machine Co., 141 Varick St., N. Y.

The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4. Munn & Co., publishers, 361 Broadway, N. Y. Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.



### HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable timeshould be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

Special Written luiormation on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Minerals sent for examination should be distinctly marked or labeled.

(7951) DeF. H. asks: 1. Can a jar filled with water and covered on the outside with tin foil and having a large wire nail passed through the cork, be used in place of a Leyden jar? A. Yes, but not an efficient one. The leakage is too great, due to the moisture on the glass. This was the first form of Leyden jar ever used. It is described in many text-books and histhe same amount of heat? A. With the same amount of fuel hot air engines develop from two to three times the power of steam engines for very small sizes. Large hot air engines have been found impracticable 3. What are the principal parts of the simplest toy hot air engine? A. The small toy hot air engine was illustrated and described in Scientific American, No. 20, vol. 76, 10 cents by mail. 4. What would be the voltage and internal resistance of a cell containing a solution of bichromate of potash and bisulphate of mercury? Two plates are sus pended in this solution, one-half of an inch apart, one is zinc and one carbon; both are 6 inches long, 11/4 inches wide and 1/4 inch thick. They are let into the solution to a depth of 5 inches. A. A bichromate cell has 118 volts. Its internal resistance is at the most a fraction of an ohm. This varies with the strength of solution and changes as the solution becomes exhausted. The bisulphate of mercury is used to amalgamate the zincs and

shown in the drawing submitted? A. It will work if wound as you show in your diagram. But we should take the four wires and wind them side by side, turn for mits, "counter to all ordinary habits of thought," will turn. Then wind the twine for separating the wires of

UNIVERSALGELD. Auf Grundlage des former value. We do not know what relation ultra violet metrischen Gewichtes und des Mo-rays bave to this effect. Lord Rayleigh has held that nometallismus, vorzüglich der Silber there is no reason to reject the theory that the effect is wahrung. Eine zwanglose Plauderie due to unequal heating of the selenium strips. The first von Karl Pamperl. 1900. Ruckerl photophone was invented by Prof. Graham Bell. Illus-

ten cents each. Ganot's "Physics," last edition, price \$6, treats this subject quite fully.

(7955) C. A. P. asks: What I want to know is this: What effect has the electro-magnet on the electric arc to cause it to be extinguished in the controller and to be deflected in the arc welding s stem? A. The action in these instances is the same as if the electric cur-Write Baker Mfg. Co., Racine, Wis., about pushing rent were flowing through a wire and the wire was free to turn around the electro-magnet. It would move, Wanted-To buy article everybody uses. Must be heing attracted or repelled according to the direction of the current. In this case the current flowing through the arc is repelled till it breaks and ceases to flow, if the made by D. M. Steward Mfg. Co., Chattanooga, Tenn. | magnet is strong; or blows the arc out into a long tongue

> (7956) H. H. asks: Would you be so kind as to let me know what is the trouble with a dynamo I made like one described in SUPPLEMENT, No. 844. I made armature according to directions only I put 24 seq. in commutator and used slightly higher fields with 13 layers No. 24. It will only redden one 16 candle 52 volt lamp, at 2,500 revolutions. I have tested for short circuits, etc., but find it O. K. Please give me some information. A. Both of the changes you have made in the design of the dynamo cut down the output of the machine. We presume you have all the current it will give. The only information we can give is what you have already found out, that it is better to take a design well wrought out. and follow it without alteration than to alter that design, and find an inferior result. Our advice to all inquirers is not to attempt to design a dynamo unless after a thorough course of instruction in that line of work.

(7957) C. W. N. writes: I noticed in your ssue of July 28, under Notes and Queries (7924), E. R. asks: Is the gage of iron and steel wire the same as copper? Your answer is, yes. Kindly permit me to correct you as to this impression. Iron and steel wire are gaged by the Washburn & Moen gage. Copper wire, as used for electrical purposes, is gaged by the Brown & Sharpe gage. A very small proportion of copper wire, known as copper market wire, is gaged by the Stubbs gage. A. When we answered the inquiry as to wire gages, we were aware that there are numerous gages in use by manufacturers for their products. We are not aware that these gages are limited to special metals. There are many more of these than you mention. It is Books referred to promptly supplied on receipt of an unfortunate state of affairs that it should be so. There ought to be but one gage for all purposes, and not a Washburn & Moen gage, a Trenton gage, an Edison age, a Brown & Sharpe gage, a music wire gage, a twist drill gage, etc. If a congress could be assembled to unify practice in this direction, it would be worth all it would cost.

#### TO INVENTORS.

An experience of over fifty years, and the preparation of more than one hundred thousand applications for patents at homeand abroad, enable us to understand the laws and practice on both continents, and to possess unequaled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

## INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

AUGUST 28, 1900,

AND EACH BEARING THAT DATE.

changes as the solution becomes exhausted. The bisulphate of mercury is used to amalgamate the zincs and does not affect the action of the cell directly.

(7952) W. T. C. writes: 1. I have a 75-watts dynamo and wish to run; it with storage batteries; how many will it take? A. To run your dynamo as a motor with a storage battery, you will require half as many cells as the voltage of the current. 2. Which is the best adapted for the purpose? A. For so small a machine you can use any storage battery. Several good ones have been advertised in our columns. 3. Can I charge the same with the dynamo when belted to a power, and how long would it take? The dynamo is series wound. A. The little machine will charge the cells by allowing 2½ volts to a cell in charging. We do not know how long it will take.

(7953) W. G. asks: 1. Can the static momers described in the SCIENTIFIC AMERICAN of February 25, 1899, and August 11, 1900, be used with an induction coil? A. We think they may be. Try it and see. That is quicker than writing about it. 2. Is the voltmeter and ammeter doscribed in SUPPLEMENT, No. 187, where it says the primary consists of 14 turns of 4 does it mean that there are four is the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will work if shown in the drawing submitted? A. It will [See note at end of list about copies of these patents.]

Bind fastener, S. A. Lewis.
Boiler cleaner, P. A. Doughty.
Book, account, J. H. Rand.
Bottle fastener, elastic milk, J. B. Kimber.
Bottle, non-refillable, A. Sommerfeld.
Bottle stopper, C. Marchand.
Bottle stopper, C. Marchand.
Bottles, flasks, etc., manufacturing, C. Boucher,
Aine. different potential between the turns.

(7954) J. G. W. H. asks: Please state the theory and principles by which the electrical receiver of a radiophone is governed? Also please tell me whether ultra violet rays when thrown on two metallic joints or break in a circuit will close the circuit. A. The radiophone, called formerly the photophone, depends for its action upon the change in resistance of a cell of selenium under the action of heat or light. The theory of this action is not fully established. It appears that the action of a candle flame upon selenium causes its electrical resistance to drop to about one-fifth its former value. We do not know what relation ultra violet rays bave to this effect. Lord Rayleigh has held that there is no reason to reject the theory that the effect is due to unequal heating of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first photophone was invented by Prof. Graham Bell. Illustrated articles on this subjectare to be found in the Scientiff of the selenium strips. The first

1	Camera, photographic, C. A. Wiley Can. See Sheet metal can.	656,798
-1	Can. See Sheet metal can. Cane mill, O. B. Stillman. Capo tasto, T. M. Fletcher. Capotasto, F. M. Fletcher. Capotasto, F. M. Metcher. Car coupling, W. E. Alexander Car coupling, J. Eslemener. Car coupling, J. Eslemener. Car coupling, J. Kelso Car coupling, J. Kelso Car coupling, J. Kelso Car door, J. Yan Slyke. Car door, J. Yan Slyke. Car door, J. Yan Slyke. Card oase, H. Bick. Carbon brush, W. A. Caswell. Carding engine under screen, J. F. White. Carpet stretcher, E. W. Doollttle. Case. See Card case. Caster support, G. D. Clark. Casting apparatus, metal, W. J. Patterson. 67,071 Casting metal, W. J. Patterson. 67,089, Centrifugal machine, L. J. Taylor.	656,904 656,743
1	Car coupling, W. E. Alexander	656,736 656,926
1	Car coupling, J. Kelso	656,844 656,984
1	Car door, J. Van Siyke	656,868
1	Car door fastener, Smith & Delano	656,860 657,021 656,652
1	Card case, H. Bick	656,925 656,871
1	Carpet stretcher, E. W. Doolittle	656,632
1	Caster support, G. D. Clark	656,628 657,072
1	Centrifugal machine, L. J. Taylor	656,908 656,677
1	Chair. See Combination chair. Window chair. Chimney raising device, W. M. Hoerle	656.891
ļ	Chain, H. J. Straker. Chair. See Combination chair. Window chair. Chimney raising device, W. M. Hoerle. Churn, Rister & Wood. Cigar rolling board. S. A. Shelly. Circuit breaker, E. Thomson. Clamp. See Pipe clamp. Rail clamp. Cleaner. See Roiler cleaner.	657,008 657,013
1	Clamp. See Pipe clamp. Rail clamp. Cleaner. See Roiler cleaner. Flue cleaner.	000,001
1	Cleaner. See Boiler cleaner. Flue cleaner. Clevis, W. P. Hendon. Clothes drier, S. V. Douglas. Clothes pin, C. M. Bowman. Clothes pin, J. F. Matthews. Clutch. friction, D. Noble. Coal and ores, apparatus for treating, J. W. Kenevel.	<b>656,693</b>
1	Clothes pin, C. M. Bowman. Clothes pin, J. F. Matthews.	656.724 656.724
1	Coal and ores, apparatus for treating, J. W. Kenevel.	656.893
١	Kenevel	656,688 656, <b>991</b>
1	Cock, J. Morrison. Combination chair. M. Belisle. Conveyer, cable, Cruicksbank & Luther. Conveyer, endless. Acklin & Patterson.	656,763 656,949 667,048
ŀ	Corn shield. M. Straussberk Corset, apparel, A. H. Wade Corset cover, H. G. Steely Cotton press, R. R. Pace Coupling. See Car coupling. Hose coupling.	656,862 656,913
1	Corset cover, H. G. Steely	656.754 657,028
į	Coupling. See Car coupling. Hose coupling.  Pipe coupling. Thill coupling.  Coupling for vahicles wagons atc. R K Thomas	656 820
i	Cover for cooking utensils, C. H. Pimlott Crank pins and eccentrics, quartering and turn-	656,855
1	Coupling. See Car coupling. Hose couplitig. Pipe coupling. Thill coupling. Coupling for vehicles, wagons, etc., B. K. Thomas Cover for cooking utensits, C. H. Pimlott	656,903 656,799
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,	Curtain fixture, H. M. Stevenson.  Curtain pole attachment, E. Platte.  Cusbion filling and shaping device, F. L. Myers	656,995 656,095
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;	& Tust	656,670
	Schmidt	656,669
İ	Schmidt	656,730
	Dre and making same, blue tetrazo, Bammann & Davidis  Dre and making same, orange, F. Scholl  Dre and making same, violet cotton. R. Demuth. Dre and making same, yellow, f. Scholl  Dre and making same, yellow azo, F. Scholl  Dre, blue-red substantive. J. Bammann et al. Dre, brown, Herzberg & Hansmann  Dre, brown, Herzberg & Hansmann  Drestuff and making same, azo, J. Bammann et al. al.	656,858 656,631
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	Engine starting machine.	656,915
	Dyes tradistictorowi. Herzberg & Haismann et al.  1	656,915 656,720 657,085 656,940
]	Engine. Rotary engine. Engine starting inechanism, explosive, C. H. Blomstrom. Engraving machine, C. Chevalier. Envelop, B. A. Brown. Envelop, H. Trenchard, Jr	656,915 656,720 657,055 656,940 656,932 657,018
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4 5 3 4 6 3 8 0 7 3 7	Envelop, B. A. Brown. Envelop, H. Trenchard, Jr. Equalizer, three-horse, J. F. Steward. Exbaust bead, Maranville & Warden. Extractor. See Fence post extractor. Eyebars, making forked, W98. Bidle. Eyeglasses, L. F. Adt. Eyeglasses, J. J. Clairmont. Fan motor, H. Sommerfeldt. Fare register, W. L. Brownell. Feed roll. F. Goetz. Feed water beater, J. Mertes. Feeding live stock. manger for, I. Morris. Fence post extractor, F. Morganthaler. Firearm W. V. Bleha Firearm rear sight, E. B. Tolman. Fire escape, portable, J. C. Scott. Fire extinguisher, A. C. Badger.	656,932 657,018 657,038 656,989 656,712 656,881 656,752 656,935 657,024 657,027 656,653 657,027 656,653 657,027 656,653 656,747 657,052 656,867 656,867 656,873
453 46380 7375 2	Envelop, B. A. Brown. Envelop, H. Trenchard, Jr. Equalizer, three-horse, J. F. Steward. Exbaust bead, Maranville & Warden. Extractor. See Fence post extractor. Eyebars, making forked, W98. Bidle. Eyeglasses, L. F. Adt. Eyeglasses, J. J. Clairmont. Fan motor, H. Sommerfeldt. Fare register, W. L. Brownell. Feed roll. F. Goetz. Feed water beater, J. Mertes. Feeding live stock. manger for, I. Morris. Fence post extractor, F. Morganthaler. Firearm W. V. Bleha Firearm rear sight, E. B. Tolman. Fire escape, portable, J. C. Scott. Fire extinguisher, A. C. Badger.	656,932 657,018 657,038 656,989 656,712 656,881 656,752 656,935 657,024 657,027 656,653 657,027 656,653 657,027 656,653 656,747 657,052 656,867 656,867 656,873
453 46380 7375 200	Envelop, B. A. Brown. Envelop, H. Trenchard, Jr. Equalizer, three-horse, J. F. Steward. Exbaust bead, Maranville & Warden. Extractor. See Fence post extractor. Eyebars, making forked, W98. Bidle. Eyeglasses, L. F. Adt. Eyeglasses, J. J. Clairmont. Fan motor, H. Sommerfeldt. Fare register, W. L. Brownell. Feed roll. F. Goetz. Feed water beater, J. Mertes. Feeding live stock. manger for, I. Morris. Fence post extractor, F. Morganthaler. Firearm W. V. Bleha Firearm rear sight, E. B. Tolman. Fire escape, portable, J. C. Scott. Fire extinguisher, A. C. Badger.	656,932 657,018 657,038 656,989 656,712 656,881 656,752 656,935 657,024 657,027 656,653 657,027 656,653 657,027 656,653 656,747 657,052 656,867 656,867 656,873
453 46380 7375 20018	Envelop, B. A. Brown. Envelop, H. Trenchard, Jr. Steward. Exbaust bead, Maranville & Warden. Extactor. See Fence post extractor. Eyebars, making forked, W9S. Bidle. Eyeglasses, L. F. Adt. Eyeglasses, J. J. Clairmont. Fan motor, H. Sommerfeldt. Fare register, W. L. Brownell. Feed roll. F. Goetz Feed water beater, J. Mertes Feeding live stock. manger for, I. Morris. Feeder solt extractor, F. Morganthaler. Firearm W. V. Bleba Firearm rear sight, E. B. Tolman. Fire escape, portable, J. C. Scott Fire extinguisher, A. C. Badger. Fire extinguishing apparatus, dry pipe, J. H. Derby. Flue cleaner, steam jet, H. I. Coggeshall. Folding machine packing device, H. K. King. Furnace. See Blast and cupola furnace. Electric furnace.	656,932 657,018 657,038 656,999 656,719 656,719 656,719 656,736 657,034 657,034 656,736 657,036 657
453 46380 7375 20018 46	Envelop, B. A. Brown. Envelop, H. Trenchard, Jr. Steward. Exbaust bead, Maranville & Warden. Extactor. See Fence post extractor. Eyebars, making forked, W9S. Bidle. Eyeglasses, L. F. Adt. Eyeglasses, J. J. Clairmont. Fan motor, H. Sommerfeldt. Fare register, W. L. Brownell. Feed roll. F. Goetz Feed water beater, J. Mertes Feeding live stock. manger for, I. Morris. Feeder solt extractor, F. Morganthaler. Firearm W. V. Bleba Firearm rear sight, E. B. Tolman. Fire escape, portable, J. C. Scott Fire extinguisher, A. C. Badger. Fire extinguishing apparatus, dry pipe, J. H. Derby. Flue cleaner, steam jet, H. I. Coggeshall. Folding machine packing device, H. K. King. Furnace. See Blast and cupola furnace. Electric furnace.	656,932 657,018 657,038 656,999 656,719 656,719 656,719 656,736 657,034 657,034 656,736 657,036 657
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