

**Notes and Queries.**

**HINTS TO CORRESPONDENTS.**

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 This is for our information and not for publication.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 time should 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 Information on matters of personal rather than general interest cannot be expected without remuneration. Scientific American Supplements referred to may be had at the office. Price 10 cents each. Books referred to promptly supplied on receipt of price. Minerals sent for examination should be distinctly marked or labeled.

(8815) W. H. T. asks: How is gas made from water? Is there a book that would enable a foundry foreman to learn how to make an analysis of the iron in his castings? A. Briefly described, water gas is produced by blowing steam through a layer of brightly glowing coal; the water is decomposed, and the coal is consumed; the gases coming off are a mixture of hydrogen, carbon monoxide, and hydrocarbons, with small amount of carbonic dioxide, and variable amount of nitrogen. When the coal cools off too far to further decompose the water vapor, this is shut off, and air is blown through until the coal again burns brightly and is ready for more steam. While the air is blown in, the gases are allowed to escape up the chimney, as they have no value as illuminant, and in fact would not burn at all. The water gas as it comes from the producer has very little illuminating power. This is imparted to it by enriching with benzine.—There is no book which would explain to anyone not a chemist how to determine the amount of iron in brass or other castings. Such work must be done by a chemist. All books on analytical chemistry of the metals describe methods for this, but would be unintelligible to any person except a regular chemist.

(8816) R. G. P. asks: Are there any chime music boxes with a set of bells on them? How does the name chime get its name? A. The word chime comes from a Latin word, meaning bell, and also cymbal. Music boxes are made with sets of bells in them.

(8817) E. G. P. asks: How can a scratch be removed from the top of an oak table (highly polished)? A. If the scratch is only a slight, superficial one, it can usually be removed by rubbing with a rag soaked with crude oil. If a deep scratch, it will be best to rub down the whole top of the table with powdered pumice and crude oil, and then re-varnish.

(8818) G. P. O. wishes a process for galvanizing such as is done on the base boards for stoves. A. The article to be galvanized is first thoroughly cleaned by dipping in weak muriatic or sulphuric acid, and is then thoroughly dried. After this it is plunged in a bath of molten zinc, wherein it becomes coated with a layer of zinc, being what is known as galvanized. The surface of the molten zinc must be kept clean by sprinkling with powdered sal ammoniac and skimming off the dross from time to time.

(8819) G. G. G. asks: How can I gild or mottle edges of books, to resemble as nearly as possible those gilded by publishers? A. To gild the edges of books, they are first trimmed smooth, then sized with egg albumen (white of egg) and gold leaf then applied. When dry it is burnished with agate burnisher. For mottling, a very thin solution of gum arabic is prepared in a tray, and the different colors are then shaken in or combed in. A half dozen or so of the books are held securely and evenly together, and the top, bottom and front edges are successively dipped in lightly, and the excess of color is each time blown off. Successful mottling is quite expert work.

(8820) W. J. D. asks: 1. Is there any method by which soft coal can be made into brick or lump form by mixing with other substances or by itself. A. The powdered or crushed soft coal can be pressed into bricks and then be partially coked to give strength. If the coal alone will not adhere sufficiently well on pressure, it can be mixed with pitch, and then partially coked. 2. Can the ordinary 150 deg. test kerosene oil be clarified to prevent the strong smell while burning in a lamp or wick oil stove? A. A good quality of kerosene will not give much odor in burning in a lamp or wick oil stove, if care be taken to keep the wick well trimmed, and to adjust so that it will burn without smoke. There is no way of further purifying kerosene oil, as to make it burn without odor.

(8821) P. C. asks: We have a dynamo of 110 volts and 25 amperes. I want about 20 pieces of good red-hot wire 1 inch long and no matter how thick, for special use. I intend to make them hot from the above-mentioned dynamo. Can you inform me what is the best

(Continued on page 103.)

**THE SATURDAY EVENING POST**

**EVERY WEEK**

**From Now to July 1, 1903**

**Only 50 cents**



**Old Gorgon Graham**

By the author of Letters from a Self-Made Merchant to His Son. A new series of papers in which Old Man Graham preaches the gospel of good business and tells some of his characteristic stories. This Life Story of a Self-Made Merchant, by George Horace Lorimer, will be one of the features of coming issues of the magazine. The Letters from a Self-Made Merchant to His Son met with universal favor, and there is every reason to believe that the new series by the same author will be equally popular. In the new series old Graham tells the story of his own business career: how he began life as a farmer's boy, worked his way to the front and became the biggest pork packer in the West.

**Try the NEW POST to July**

New features, more of them, greatly improved. A handsomely printed and beautifully illustrated weekly magazine. Established 175 years and circulating nearly half a million copies every week.

**THE CURTIS PUBLISHING COMPANY PHILADELPHIA, PA.**

**WOOD or METAL Workers**  
Without Steam Power should use our Foot and Hand Power Machinery. Send for Catalogues  
A—Wood-working Machinery, B—Lathes, etc.  
**SENECA FALLS MFG. CO.**  
693 Water St., Seneca Falls, N. Y.

**ENGINE & FOOT LATHES** MACHINE SHOP OUTFITS TOOLS AND SUPPLIES  
SEBASTIAN LATHE CO.  
**MECHANICALLY TRUE.** Our machinery for correctly shaping and smoothing the teeth of all kinds of gear is unsurpassed work that is mechanically perfect. Cost much less than on the old principle. Send for free booklet. **BUFFALO GEAR & PATTERN WORKS, Buffalo, N. Y.**

**Our Pen-Carbon Letter Book** Copies Letters While You Write  
Use your own paper. Any pen, any ink, no press  
**Government Officials, Colonists, Farmers,** will find it invaluable.  
Every man who writes letters should write for prices if his stationer does not keep it. We manufacture "Ditmars" Typewriter Ribbons and Carbon Paper.  
**PEN-CARBON MANIFOLD CO., Dept. 1, 145-7-9 Centre St., New York, U.S.A.**

**Wire Cloth, Wire Lath, Electrically-Welded Wire Fabrics**  
and Perforated Metal of all Kinds  
Manufactured by  
**CLINTON WIRE CLOTH COMPANY, CLINTON, MASS.**  
Boston New York Chicago San Francisco

**The "Wolverine" Three Cylinder Gasoline Marine Engine.** It writes for catalogue.  
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 2 to 30 H. P.  
**WOLVERINE MOTOR WORKS, Grand Rapids, Mich.**

**B. F. BARNES ELEVEN-INCH SCREW CUTTING LATHE**  
For foot or power as wanted. Has power cross feed and compound rest. A strictly high grade, modern tool. Ask us for printed matter.  
**B. F. BARNES COMPANY, Rockford, Ill.**

**GREAT POWER SMALL COST.** The maximum of strength, durability and safety, with the minimum of cost that describes our **Holding Engines** for operation on Gasoline, Oil, Kerosene or Fuel Oil. Every part of the engine is interchangeable. Some save its cost in fuel alone. Both free ton and geared hand, 2 to 150 h.p. For queries, prices, and orders, **Weber Gas & Gasoline Engine Co., P. O. Box 1124, Kansas City, Mo.**

**ARMSTRONG'S No. 0 THREADING MACHINE**  
Can be attached to bench or post. Designed for threading the smaller sizes of pipe, iron or brass, also bolts. Has two speeds, one for pipe 1/4 to 1 inch; the other for pipe 1/4 to 2 inches, inclusive. Uses the regular Armstrong adjustable dies. Other attractive features. Send for particulars. **The Armstrong Mfg. Co., 139 Centre Street, New York, Bridgeport, Conn.**

**PALMER MARINE and STATIONARY MOTORS**  
2 and 4 CYCLE are no experiment, as they are in successful operation in all parts of the world. Launches in stock. Send for Catalogue.  
**PALMER BROS., Cos Cob, Conn.**

**SPLITDORF SPARK COILS**  
25 VANDEWATER ST NY

# CORNISH

## PIANOS AND ORGANS

**FREE IN YOUR HOME FOR A YEAR**


Sold From Factory to Home Direct. **SAVING ONE-HALF.**



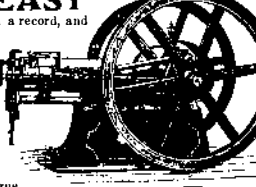
**CASH OR EASY PAYMENTS.**  
We want to prove to any intending purchasers of a Piano or Organ that there is nothing better than a CORNISH. Everything is just right. Appearance, Tone, Make-up, Terms and price. We will ship any instrument on any reasonable term of trial and will prepay freight if necessary, although the cost of sending is not added to our price. Any honest person can own one of the Popular Cornish Pianos or Organs on terms he will like. No house in the music trade is better equipped than the Cornish; no firm has a better standing among its 250,000 customers than the Cornish Co., and no firm can or does make such liberal propositions. Let us send any intending purchaser our only salesman—the Cornish Souvenir Catalogue. Fifty styles of beautiful Pianos and Organs to select from; and to give an exact idea as to the appearance of our latest styles we have prepared Miniature Pianos and Organs which reproduce in facsimile the actual instrument, color of wood, trimmings, etc., are accurately shown. Catalogues and Miniatures FREE ON REQUEST. Charges paid by us. To every purchaser we present a beautiful musical outfit, consisting of a Souvenir Album containing 40 of the latest successes in Vocal and Instrumental Music; full size; bound. Cornish Pianos have the finest attachment for correctly imitating all stringed instruments, such as Harp, Mandolin, Banjo, etc., and Cornish Organs can be fitted with our patent Delectable Action, equal to a complete Orchestra in your home. Catalogue, Miniatures, and Prize Medal Special Offers for 1902-3 FREE. Mention this paper and write to-day. **CORNISH CO.,** Washington, New Jersey.

**AN ENGINEER'S LIBRARY.**  
An absolute Encyclopedia for Engineers or for Steam Users, Electricians, Firemen and Machinists, is the **HANDBOOK OF ENGINEERING.**  
By HENRY C. TULLEY.  
Third edition, enlarged and revised, 5,000 copies, now ready. Sent anywhere on receipt of price, \$3.50—money back if dissatisfied. 400 fine illustrations. Thoroughly reliable and practical. Handsomely bound in leather and gilt. Pocket-book form.  
H. C. TULLEY & CO.,  
1060 Wainwright Bldg., St. Louis, Mo., U. S. A.

**Van Norman Universal Bench Lathes**  
have a large line of attachments. Cut shows nothing attachment as applied to end of bed of lathe. Converts lathe into a first-class small milling machine.  
Send for catalog.  
**WALTHAM WATCH TOOL CO.,**  
Springfield, Mass.



**JUST AS EASY**  
to buy a Gas Engine with a record, and far more economical  
**OLDS** Gas & Gasoline Engines  
have stood the test of us. They have been brought to their present high standard by a life-time of study and practical experience. Stationary Engines, 1 to 50 h. p. Portable Engines, 4 1/2, 8 and 12 h. p.  
Write for illustrated catalogue.  
**OLDS MOTOR WORKS, 216 River St., Lansing, Mich.**



**EVOLUTION OF THE AMERICAN LOCOMOTIVE.**—By Herbert T. Walker. A valuable series by a member of the National Railway Museum Committee. The locomotive from 1825 to date is described and illustrated by careful drawings, great attention being given to historical accuracy. 21 illustrations. **SCIENTIFIC AMERICAN SUPPLEMENTS 1112, 1113, 1114.** Price 10 cents each. For sale by Munn & Co. and all newsdealers.

**The MEDART BOAT BUILDING MATERIALS**  
bring boat construction within the range of amateurs, at a small cost.  
Yachts, Launches, Row Boats.  
Send stamp for catalog.  
**FRED MEDART, 3545 DeKalb St., St. Louis, Mo.**



Hang Your Electric Light on a  
**Two Balls Adjuster**  
and place it or take it just where you want it. Raise and lower your light at will—all with automatic adjustment. For full description send for our Pamphlet No. 30.  
**THE VOUGHT-BERGER COMPANY,**  
La Crosse, Wis.



**APPERT GLASS VESSELS**  
DO NOT BREAK ACID PROOF  
ELECTRICAL SCIENTIFIC EXPERIMENTAL  
4 to 40 Gallons Capacity  
Write for Pamphlet "B"  
**APPERT GLASS CO., 277 B'dway, New York.**

There are no better Floats made than the  
**HERCULES**  
You take no chance when you buy them. **40,000** in use.  
**HERCULES FLOAT WORKS,**  
Box 372,  
Springfield, Mass.



**D. L. HOLDEN**  
REAL ESTATE TRUST BLDG., PHILA., PA.  
SOLE MANUFACTURER  
**REGEALD ICE MACHINES**  
SEE FIRST PAGE, SCIENTIFIC AMERICAN, SEPTEMBER 1902.

material to make the wire from to keep hot for days and months? A. Platinum is the only material which can withstand red heat for any length of time without being destroyed by oxidation.

(8822) E. L. C. asks: 1. If a vessel sinks in five miles of water, will she go to the bottom? If not, why? I think she will; the others think not. A. If a vessel begins to sink, it must continue to sink till it reaches the bottom. If it is compressed by the pressure of the water as it goes down deeper and deeper, it becomes still heavier with reference to the water than it was at the surface, and at the surface it was heavy enough to sink. At greater depths it will be able to sink faster, since the water is not compressed to any extent at greater depths than it is near the surface. If anything can sink at all in water, it will go to the bottom before it stops. 2. If a man gets into a tank of water resting upon a pair of scales, and floats upon the water, will the scales register the man's exact weight in addition to the weight of the tank and water? Will it make any difference whether he floats or lets himself sink? The tank sides are high enough, so that no water can overflow. A. The balances will show the weight of the man in addition to the weight of the tank and the water. When the man gets into the water, the water rises in the tank; that is, it becomes deeper. It is exactly the same as if more water were poured into the tank. No one would doubt that the scales would show more weight if 100 pounds of water were put into the tank. Why not when 100 pounds of man are put in. This question has traveled for a century in various forms around the world.

(8823) S. B. M. asks: Will you kindly settle the following arguments? Practically the same principle is involved in all three, and of course the velocity of the cannon ball in the first is absurdly small, but that is granted for the sake of the argument. 1. A train is running eastward at a speed of 100 miles an hour. Mounted on the front of this train is a cannon. From the cannon is fired a projectile with a velocity of one hundred miles an hour westward; i. e., in a direction opposite to the motion of the train. A holds: 1. That the projectile will move over the top of the train with a velocity of 100 miles an hour. 2. That its velocity with regard to the ground is nil; i. e., through space it has no velocity. 3. That a rifle ball will reach the ground in just as short a length of time when fired at a high velocity as if it were dropped from the muzzle of the gun with no lateral velocity, granted of course that the ground is level and the bore of the gun is parallel to the ground. B holds: 1. That the projectile will move over the top of the train at the rate of 200 miles an hour. 2. That with regard to the ground it has a velocity of 100 miles an hour westward. 3. That this is not true. A. In your various propositions regarding relative motion, the one whom you designate as A is right and 1 is wrong. Such problems are applications of Newton's Three Laws of Motion, or rather of the first and second laws. These laws are to be found in all school textbooks of physics. The cannon mounted upon the train which is running 100 miles an hour is carried eastward by the train with a velocity of 100 miles an hour, and sends its projectile westward with a velocity of 100 miles an hour. It should be plain that a ball which moves east and at the same time west with the same velocity will be at rest with reference to the earth below it. The train moves away under it. The ball would drop vertically upon the roof of the train, or upon the earth below from the muzzle of the gun, if the train could run from under it before it had time to fall upon the roof. The rifle ball shot horizontally will fall toward the ground as really and with the same velocity as if it were dropped vertically. See Newton's Second Law. Gravitation produces its effect, whether it acts at the same time with other forces or acts alone. This is the reason why a ball which is projected upward returns to the earth again. All objects not supported fall toward the center of the earth in exactly the same manner, since gravity produces its effect upon all alike. It matters not how they are moving under the action of other forces. II. An elevator falls down a shaft at the rate of 50 feet per minute; a man drops after it at the rate of 60 feet per minute. A holds that the man will strike the elevator with the same force as if the elevator were stationary and he were dropping 10 feet per minute. B holds that he will strike it with less force. A. A man who strikes an elevator which is moving ten feet per minute slower than he moves will strike it with a velocity of ten feet per minute, and give a blow proportional to his weight and his velocity. III. The same thing as II. (a) A train is moving at the rate of 30 miles an hour; on the same track a train is following at 40 miles an hour; (b) they are moving at the same speeds on parallel tracks. A holds that (a) the second train will strike the first with the same velocity or force as though the first were standing still and the second struck it going at the rate of 10 miles an hour; (b) that the second train will pass the first at the rate of 10 miles an hour—will take as long to pass it as though it were standing still and the second

**ELEVATING - CONVEYING POWER TRANSMISSION MACH'Y COAL WASHING MACHINERY**  
U. S. A. The JEFFREY MFG. CO. Catalogues For

**Coal Mining Machines**  
ELECTRIC MINE LOCOMOTIVES  
POWER COAL DRILLS  
COAL HANDLING MACHINERY

**Travel in Comfort.**  
The service of fast trains over the Lake Shore & Michigan Southern Ry., between Chicago, Toledo, Cleveland, Buffalo, New York and Boston, in frequency, speed, punctuality, equipment and comfort is unequalled.  
When you purchase a ticket over this line your investment covers the best in travel that can be bought.  
"Book of Trains" tells about it; sent free to any address.  
A. J. SMITH,  
G. P. & T. A., Cleveland, O.



**BEST REPEATING SHOT GUN ONLY \$15.75**  
Spartan writes: "I sprang last gun in the world." No more after present lot sold. Original slide level gun made of best English steel. Barrel fitted with barrel double extractor. Trip down system. Six hole in 2 second strongest retractor made. \$15.75 per set U. S. D. balance \$10.75 and expressage, examination allowed. F. BASSMAN, 578 Broadway, N. Y.

**For Heavy Continuous Work**  
every machine shop will commend our **Power Pipe Threading and Cutting Machine.** Comes 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. **Send for Catalogue.**  
**THE MERRELL MFG. CO.,**  
501 Curtiss Street, TOLEDO, OHIO.



**BICYCLE TIRE REPAIRING - THE**  
Mending of Single Tube Tires.—A practical article illustrating the method of inserting patches and plugs with pliers and pluggers, together with rubber band plugging and the use of puncture bands. 9 illustrations. Contained in SUPPLEMENT 1102. Price 10 cents. For sale by Munn & Co. and all newsdealers.

**THE MIETZ & WEISS KEROSENE and GAS ENGINE**  
burns KEROSENE cheaper and safer than gasoline. Automatic, simple, reliable. No electric battery or flame used. Perfect regulation. Belted or directly coupled to dynamo for electric lighting, charging storage batteries, pumping and all power purposes.  
A. MIETZ,  
125-128 West St., New York.  
ADOPTED BY U. S. GOVERNMENT.  
Highest Award, direct coupled Generator Set, Paris Exposition, 1900, Gold Medal, Pan-American Exposition, 1902, Gold Medal, Charleston, S. C., Exposition, 1902.



**THE "BEST" LIGHT**  
Is a portable 100 candle power light costing only two cents per week. Makes and burns its own gas. Brighter than electricity or acetylene and cheaper than kerosene. No dirt. No grease. No odor. Over 100 styles. Lighted instantly with a match. Every lamp warranted. Agents Wanted Everywhere.  
**THE "BEST" LIGHT CO.,**  
87 E. 5th St., Canton, O.  
Owners of Original Patents.



**A WONDERFUL LIGHT**  
Canton Incandescent Gasoline Light.  
Cheaper than kerosene. Handier than gas. Better than electricity.  
Average Cost 3 cts. Per Week.  
No smoke; no smell; one common match generates and lights them. You can read fine print 45 feet, and they are sold on a year's guarantee.  
All styles for in and out-door lighting, 100 to 600 candle power.  
Prices from \$2.50 up, according to kind. Catalogue No. 1.  
**Canton Incandescent Light Co.,**  
1220 E. 4th Street, CANTON, O.  
"Turn on the light."



**New Standard Electric Gas Lighter.** \$1.50 each. Good for one year in any home. New cells by mail, 40c quantities, \$10 per hundred.  
**Incandescent Welsbach Lighter.** \$1.50 each.  
**Locomotive and Gas Stove Lighter.** Money makers for bright people. Agents wanted.  
**WM. ROCHE, Inventor and Sole Mfr.,**  
42 Vesey Street, New York, N. Y.



**THE EQUITABLE**  
HENRY B HYDE, Founder

**J. W. ALEXANDER** PRESIDENT  
**J. H. HYDE** VICE PRESIDENT



**WASHINGTON AND LINCOLN**  
defended and protected their country while they lived.  
The Father of a family should defend and protect his family, not only while he lives but after he dies.  
This can best be accomplished by Life Assurance. An Endowment policy in the Equitable will protect your family in the event of your death, and will provide for your own future if you live.  
For full information fill out coupon below.

Vacancies in every State for men of character and energy to act as representatives. Apply to Gage E. Tarbell, 2d Vice-Pres.

**The Equitable Life Assurance Society of the United States,**  
120 BROADWAY, NEW YORK. Dept. No. 29.

Please send me information regarding an Endowment for \$..... if issued at..... years of age.

Name.....  
Address.....

(Continued on page 104)

### Grand New Book

for 1903. "How to Make Money with Poultry and Incubators." Size 8x11 inches, 196 pages. Contains among its many other invaluable things for Poultrymen the following Special Chapters: I. Starting with an Incubator; II. Handling Chicks in an Incubator; III. Feeding the Chicks; IV. Duck Producing on a Large Scale; V. Broiler Raising; VI. Profitable Egg Farming; VII. The Egg and Poultry Combination; VIII. Egg and Fruit Farming; IX. Scratching Shed House Plans; X. Incubator and Brooder House Plans; XI. Feeding for Eggs, and XII. Standard Bred Poultry. We usually request 10 cents to pay for the mailing of this book, but for the next 30 days we will mail it free to anyone who will mention this paper in writing. Better write now, "let you forget." Address nearest office.

**CYPHERS INCUBATOR COMPANY,**  
Buffalo, N. Y. Chicago, Ill. Boston, Mass. New York, N. Y.

### MORAN FLEXIBLE JOINT

for Steam, Air or Liquids. Made in all sizes to stand any desired pressure.  
Moran Flexible Joint Co., Inc'd,  
149 3d East St., LOUISVILLE, KY.



### ARTESIAN

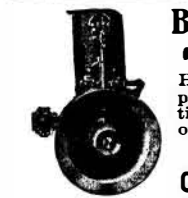
Wells, Oil and Gas Wells drilled by contract to any depth from 50 to 3000 feet. We also manufacture and furnish everything required to drill and complete same. Portable Horse Power and Mounted Steam Drilling Machines for 100 to 1200 feet. Write us stating exactly what is required and send for illustrated catalogue. Address:

**PIERCE WELL ENGINEERING AND SUPPLY CO.,**  
136 LIBERTY STREET, NEW YORK, U. S. A.



### "CUSHMAN" CHUCKS

All styles and sizes.  
Send for Catalogue.  
**THE CUSHMAN CHUCK CO.,**  
189 Allyn St., Hartford, Conn.



### BARKER MOTORS

1 to 8 H. P., \$80 to \$220  
Have more good points, fewer parts and require less attention in operation than any other.  
Launches, Valves, Specialties.  
**C. L. Barker, Norwalk, Ct.**

### 200 Egg Incubator

For \$12.50  
The simplest, most perfect incubator made in the world. This is a new one at a remarkably low price. It is an enlargement of the famous

### WOODEN HEN

and made as thoroughly good as any incubator on the market. It will hatch every fertile egg, and stand up to regular usage as well as the most costly.  
Write for free catalogue with 14 colored views.  
**GEO. H. STALL,**  
Quincy, Ill.

## Scientific American Building Monthly

NEW VOLUME NOW READY  
VOL. 34—JULY to DECEMBER, 1902  
A Monthly Magazine of Domestic Architecture  
Sumptuously Illustrated

275 Illustrations Six Covers in Tint 146 Pages  
Bound in Boards Price, \$2.00 prepaid by mail

The Thirty-fourth Volume of the SCIENTIFIC AMERICAN BUILDING MONTHLY more than maintains the high standard established by this valuable Magazine. Its "Talks with Architects"—contributions by the leading architects of the day; its editorial discussions of important subjects relating to domestic architecture; and its many specialized Departments make it the most useful and most valuable publication of its kind.

#### TALKS WITH ARCHITECTS

"A Talk on House Fittings," by a sanitary expert. Mr. Frederick S. Lamborn "Municipal Art." Mr. F. Wellington Rucstuhl on "Sculpture for the Home." Mr. Charles M. Lebeau on "Opportunities for Decorative Art." William Martin Aiken on the "City Architect." Mr. Percy Griffen on "Small Houses."

#### EDITORIAL ARTICLES

"Cheap Houses," "Walls and Wall Treatment," "The Arts and the House," "The Country House," "How the Architect Helps the Home," "How the Householder Helps the House."

#### DEPARTMENTS

"The Garden," "The Household," "Sanitation," "Stable Lore," "The City House," "Civic Betterment," "Country Life," "The Flat," "Fire Protection," "The Country House," "Housing Problems," "Heating Talk," "Furniture," "House Suggestions," "Wall Papers," "The Kitchen," "New Books," "Legal Notes," "New Building Patents," "Publishers' Department."

The SCIENTIFIC AMERICAN BUILDING MONTHLY contains each month photographs and plans of dwelling houses, gardens, country estates and buildings of moderate price, together with a cover beautifully printed in tint. The illustrations are all made from photographs taken expressly for the Magazine and are printed with every advantage of the printer's art. The plans which accompany most of the illustrations present a complete synopsis of each subject and are a unique feature of this valuable Magazine. Careful and concise descriptions accompany each illustration. The illustrations include photographs of exteriors, interiors and details, views of gardens and ornamental adjuncts to the house. No expense is spared to make this Magazine the leading periodical of its class and of the utmost practical value to its readers.

For Sale by  
**MUNN & CO., 361 B'way, New York City**  
and all newsdealers

going at 10 miles an hour. B holds (a) that the second train will strike with less force and (b) that it will take longer to pass the first train. A. The swifter train will pass the slower train as if it were standing still and the swifter had a velocity equal to 10 miles per hour, the difference of the two velocities. All these answers are based upon the supposition that the resistance of the air is excluded from the problem, as is usually done in such cases. This is not necessary, however, in these answers, since it is stated in the questions that a certain definite velocity is attained, the resistance of the air being one of the elements in attaining the velocity.

### INDEX OF INVENTIONS

For which Letters Patent of the United States were issued for the Week Ending  
January 27, 1903,  
AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Agricultural implement, W. C. Allen.....	719,291
Air compressor, W. M. Myers.....	719,127
Amalgamator, ore, J. E. Sutphen.....	719,161
Angle brace, extensible or extension, J. H. Rusby.....	719,050
Applicator, Berley & Nebraska.....	719,175
Asphalt cutting attachment for steam rollers, J. Richards.....	719,260
Axle washer, vehicle, W. C. Folant.....	719,101
Bag holder for bagging grain, E. M. Gilbert.....	719,210
Bailing press, J. S. Tuttle.....	719,278
Ball and socket joint for coils, etc., E. Debes.....	719,310
Basket box, W. L. Cornelius.....	719,195
Belt coupling, iron, G. W. Comee.....	719,121
Bedstead attachment, J. A. Martin.....	719,125
Bedstead, folding, A. Alendy.....	719,292
Belt shifting device, G. W. Ruth.....	719,262
Bicycle brake, coaster, J. Hurck.....	719,118
Binder, temporary, E. A. Trussell.....	719,063
Binding, Smyth & Smyth.....	719,154
Boats, ventilation of submarine, S. Lake.....	719,235
Bobbin holder, W. Fielding.....	718,995
Body brace, W. B. Dewees.....	719,311
Boller, A. Jaeger.....	719,224
Boiler scale, compound for removing steam, J. N. Henderson.....	719,002
Bolster spring, N. Halvorsen.....	719,000
Book holder, H. B. Smith, Sr.....	719,386
Book holder bracket, adjustable swivel swing, W. J. Walsh, reissue.....	12,076
Bottle closing bead or stopper, G. G. Campbell.....	719,184
Breast supporter, P. D. Beeman.....	719,075
Bridge, rolling lift, S. T. Smetters.....	719,153
Briquet, W. J. Roussel.....	719,047
Brush, C. E. Graham.....	718,999
Brush, L. Johnson.....	719,227
Brush, fountain, J. F. Spence.....	719,156
Brush, hair, G. N. Holland.....	719,336
Bucket dumping apparatus, W. R. Wilcox.....	719,400
Buggy top, E. A. Rhinesmith.....	719,044
Buildings, etc., material for the construction of, L. Millet.....	719,243
Bulkhead doors, means for operating, A. Du Bois-Reymond.....	718,973
Button, spring, J. Wetzel.....	719,067
Buttoner, collar, W. D. Paterson.....	719,035
Cabinet, machine bearing, T. Kundtz.....	719,233
Can salting machine, W. E. Dement.....	718,987
Candy making machine, Friend & Price.....	718,997
Canopy support, W. J. Snyder.....	719,268
Car brake mechanism, J. Shelton.....	719,148
Car coupling gravity pin lifter, W. B. Dievendorf.....	719,096
Car, derrick, J. A. McManus.....	719,247
Car, dumping, J. A. McManus.....	719,248
Car fender, J. Quern.....	719,256
Car heating system and steam trap therefor, W. H. Farnham.....	719,363
Car, passenger or baggage, F. Parsons.....	719,362
Car replacing frog, H. C. Harrar.....	719,215
Car sign, electric, I. B. Brewer.....	719,180
Car switching mechanism, T. A. Ennis.....	718,993
Car wheel and track therefor, T. W. Kester.....	718,339
Cars, device for decreasing noise resulting from vibration in railway, H. G. Farr.....	719,098
Carpet strip cutting machine, W. B. Cobb.....	718,982
Casket trimming machine for embossing, H. T. Leemis.....	719,238
Chaplet and shrine of the holy rosary, T. Sault.....	719,263
Checks for hotels, restaurants, etc., control and guest's pay, M. Geller.....	719,209
Cherry seeder, E. D. Parker.....	719,131
Check block, R. T. Wilson.....	719,288
Churn meter, G. W. Stiles.....	719,056
Cigar box, M. P. Farrell, et al.....	719,097
Cigar cutter, E. A. Willard.....	719,165
Cigar machines, pneumatic transferring mechanism for, O. Tyberg.....	719,279
Cigar perforator, F. M. Slueman.....	719,267
Clothes drier, foldable, J. K. Champ.....	719,186
Clutch, friction, Ellicott & Norris.....	719,204
Coal elevator, self dumping, D. W. Jones.....	719,009
Cock lock, gas, F. S. Martin.....	719,241
Compass or scriber, H. E. Seymour.....	719,338
Compressor and valve for same, Reynolds & Robinson.....	719,142
Concentrating table, A. R. Willey.....	719,402
Concentrating table slimer attachment, C. T. Arkins.....	719,409
Contact structure, surface, E. M. Hewlett.....	719,083
Conveyor, R. Blum.....	719,178
Cooler, F. Guttenberg.....	719,212
Copper ores, treating, W. Payne, et al.....	719,132
Cotton press, E. D. Carter.....	719,083
Cultivator, A. Psota.....	719,138
Cultivator arch bar, C. M. Sullins.....	719,159
Current traction system, alternate, W. M. Morley.....	719,024
Curtain or partition holder, A. M. Brussh.....	719,076
Curtain pole bracket, C. H. F. Daily.....	719,406
Cushion spring upholstered, E. B. Smith.....	719,155
Cutter head, E. S. Shimer.....	719,266
Cyanids and acetone, making, C. B. Jacobs.....	719,223
Dental disk holder, E. J. Deubet.....	719,312
Desk, school, J. Karpen.....	719,338
Digester linings, composition for, E. Hentschel.....	719,216
Disinfectant vaporizer, S. Trenner.....	719,277
Disinfecting device, L. E. Jones.....	719,228
Display cabinet, ribbon, N. Lafen.....	719,234
Display holder, R. H. Walk.....	719,164
Display rack, A. V. Thomas.....	719,060
Distilling apparatus, water, J. Ellison.....	718,991
Ditching machine, J. H. Sylvestersen.....	719,058
Doubling and rewinding machinery, J. D. Conant.....	719,090
Dough divider, F. H. Van Heuten.....	719,280
Dough dividing and shaping machine, H. F. W. Hueg.....	719,116
Dough mixing apparatus, H. H. Wilson.....	719,070
Drainage conveyer trough, F. G. Wolfe.....	719,406
Dress shield fastener, C. O. Petersson.....	719,039
Drying closet, M. A. O'Coner.....	719,130
Dye and making same, yellow azo, F. Runkel.....	719,048
Eccentric, J. Pincin.....	719,133
Electric circuit controller, automatic, H. W. Leonard.....	719,018
Electric socket, A. P. Seymour.....	719,265
Electric switch, automatic, W. Lasar.....	719,122
Electric time switch, J. J. Steckal, Jr.....	719,390
Elevator, N. Hiss.....	719,114
Elevator gate, C. Anderson.....	719,071
End gate, J. E. Gibbs.....	719,107

(Continued on page 105)

**You Should Know More** about the pen that has revolutionized the fountain pen business—the pen that is so extensively, but crudely imitated—the pen that by such imitation, is acknowledged to be the 20th Century Wonder in fountain pen evolution.

**CONKLIN'S SELF-FILLING PEN**  
SEND FOR OUR BEAUTIFUL NEW ILLUSTRATED CATALOGUE explaining its many advantages over all other fountain pens, and showing patented features not found in imitations; also Prof. Sloan's suggestions, for improving your hand-writing, model capitals, business lettering, vertical writing, etc. It's yours for the asking.

THE CONKLIN PEN CO., 813 Madison St., Toledo, Ohio.



### G. CRAMER DRY PLATE CO.

ST. LOUIS, MO.

Offices in  
New York: 32 East 10th Street  
Chicago: 1211 Masonic Temple  
San Francisco: 819 Market Street

**CRAMER**  
Crown Plates are more rapid than any other plate in the market. With this plate clear quick printing Negatives can be secured.

These plates are especially adapted for Tourists using Hand-Cameras



### The No. 4 YOST WRITING MACHINE



The distinctive features of the Yost Machine, permanent alignment, direct inking, beautiful work, strength, simplicity, and durability are shown in perfection in the No. 4 Model.

**Yost Writing Machine Co.**  
NEW YORK CITY. LONDON, ENG.

REVERSING STEAM TURBINE.—Parson's recently perfected turbine for boats. Illustrations showing details. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 1155. Price 10 cents, by mail, from this office, and from all newsdealers.

### The Typewriter Exchange



1 1/2 Barclay St., NEW YORK  
124 La Salle St., CHICAGO  
38 Bromfield St., BOSTON  
817 Wyandotte St., KANSAS CITY, MO.  
209 North 9th St., ST. LOUIS, MO.  
536 California St., SAN FRANCISCO, CAL.

We will save you from 10 to 50% on Typewriters of all makes. Send for Catalogue

### INDUCTION COILS

for experiments in X rays and other electrical work.



Catalogue Free.  
**E. S. RITCHIE & SONS** BROOKLINE, MASS

### TYPEWRITERS ALL MAKES

All the Standard machines SOLD or RENTED ANYWHERE at HALF MANUFACTURERS' PRICES. Shipped with privilege of examination. Send for Catalogue.  
Typewriter Emporium, 203 LaSalle St., Chicago



A man bought a house for \$5300, painted it with

### Patton's SUN-PROOF PAINT

and sold it for \$6000—That's paint profit.

Patton's Sun-Proof Paint guaranteed for five years. Offered in last ten decades.

PITTSBURGH PLATE GLASS Co., General Distributors. Send for Book of Paint Knowledge and Advice (free) to Patton Paint Co., 227 Lake St., Milwaukee, Wis.

## EVANS' VACUUM CAP WILL MAKE HAIR GROW.

This Appliance will massage the scalp and force a healthful circulation. It will stop the hair from falling out and restore a normal growth where live follicles exist. It is used about ten minutes each night before retiring. Price \$35.00 which will be refunded in full if it does not give satisfaction within thirty days.

For full particulars address:  
**EVANS' VACUUM CAP CO.**  
Fullerton Building, St. Louis.

### SETS OF CASTINGS OF MODEL ENGINES

SEND 10¢ FOR 126 PAGE ILL. CATALOGUE. ALSO TOOLS, GEAR WHEELS & PARTS OF MODELS.  
**GOODNOW & WIGHTMAN**  
Removed to 182 Milk Street.

### Howard Two and Four Cycle MARINE AND AUTOMOBILE MOTORS

Write for Cat. Grant Ferris Co. Troy, N. Y.



No Fire, Smoke, Heat. Absolutely safe. Free catalog.  
**TRUSEOTT BOAT MFG. CO., St. Joseph, Mich.**

### COLD GALVANIZING

Save all the Spelter consumed in galvanizing by the hot process, by using our Patent Cold Galvanizing Process, as the amount of spelter lost as dross in the hot process if used in our process will give sufficient protection to any kind of work to make it rust-proof even against salt. Our licensees include U. S. Government, The Standard Oil Co., Herreshoff Boat Building Co., Townsend & Downey, Armour Packing Co. Licenses granted on royalty basis. Sample and custom work done at our factory, 108-110 W. 11th St. Main Office, 348 Broadway. **U. S. ELECTRO-GALVANIZING CO.**