

EDUCATIONAL NOTICE.

A subscriber of ours, a prominent business man of Boston, writes that he will be very glad to hear from any ambitious reader of SCIENTIFIC AMERICAN, who desires to study Mechanical, Electrical, Steam or Textile Engineering and has not the opportunity to attend school.

Write to W. L. B., Box 3737, Boston, Mass., for particulars if you are ambitious and in earnest.

ELECTRICAL ENGINEERING TAUGHT BY MAIL.

Write for our Free Illustrated Book. "CAN I BECOME AN ELECTRICAL ENGINEER?" We teach Electrical Engineering, Electric Lighting, Electric Railways, Mechanical Engineering, Steam Engineering, Mechanical Drawing, at your home by mail.



YOUR PAY

can be increased more quickly by than by any one else if you will study in some of your spare time. We'll help you learn what you need and give you the best books free to study from, while giving you a chance to

EARN MORE WHILE LEARNING courses in Electrical, Mechanical, Steam and Civil Engineering, Drafting, Art, Architecture, Mining, Metallurgy, Business, Stenography, Journalism, Bookkeeping, etc.

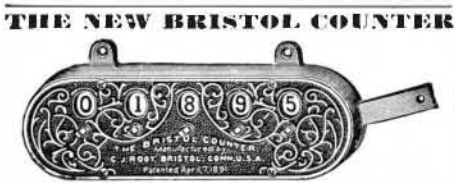
THE CONSOLIDATED SCHOOLS, 156 Fifth Ave., N. Y.

SUMMER SESSION NEW YORK UNIVERSITY—1902.

Courses in Chemistry and Physics. For circular address, Registrar, University Heights, New York City.

ROSE POLYTECHNIC INSTITUTE A College of Engineering. Mechanical, Electrical, Civil Engineering; Chemical Courses; Architecture. Extensive shops. Modernly equipped laboratories in all departments.

D. L. HOLDEN REAL ESTATE TRUST BLDG PHILA., PA. SOLE MANUFACTURER REGEALD ICE MACHINES



Registers an accurate account of work done on printing presses, grain mills, weighing, measuring and other automatic machines. Counts up to 1,000,000 and repeats automatically.

EDSON'S SYSTEM for the removal of VAULT and CESSPOOL matter. Smaller Complete Outfits for Private Estates, Hotels and Institutions.

EDSON MANUFACTURING CO., 182 Commercial Street, Boston, Mass., U. S. A.

GET THE GENUINE PUNCTUREPROOF SELF-HEALING PNEUMATIC BICYCLE TIRES. SAVE MONEY AND TROUBLE. NAILS, TACKS AND GLASS WILL NOT LET THE AIR OUT.

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.

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

50 YEARS' EXPERIENCE PATENTS TRADE MARKS DESIGNS COPYRIGHTS & C. Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable.

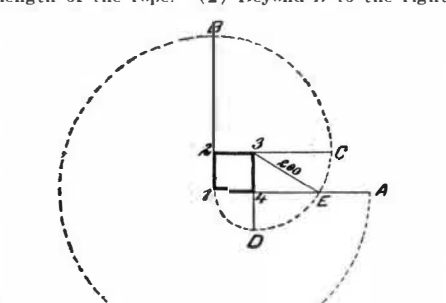
Notes and Queries.

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.

(8605) A. K. M. asks: 1. Can you let me know the cheapest and most simple way of producing oxygen? A. Oxygen is generated by heating a mixture of manganese dioxide and potassium chlorate in a metal flask.

(8606) E. E. R. asks: I would like to have you publish this problem in your query column: A calf is tied with 400 feet of rope to the corner of a barn 100 feet square.



his rope shortens to 300 feet, and he grazes over one-fourth of a circle whose radius is 300 feet. (3) Again his rope shortens to 200 feet with the center at 3, and he grazes around till he covers one-fourth of a circle with a radius of 200 feet; but a part of this is included in the area already covered.

(8607) E. E. S. asks: 1. What is the best way to mount a map on a muslin backing, and would a window shade be suitable? A. Moisten the muslin, stretch and tack it down on a table.

PERFORATED METALS FOR ALL USES, MADE AS REQUIRED. THE HARRINGTON & KING PERFORATING CO. 225 N. UNION ST. CHICAGO, ILL. U.S.A.

SEND US NAMES OF MAGAZINE READERS \$12 to \$18 a week for this work. Men, women and young people, here is a splendid opening. Write for particulars to U. S. PUBLICATION COMPANY, Dept 12, 125 E. 23d Street, New York.

"AMERICA'S SUMMER RESORTS"

This is one of the most complete publications of its kind, and will assist those who are wondering where they will go to spend their vacation this summer.

NEW YORK CENTRAL LINES A copy will be sent free, postpaid, to any address on receipt of a two-cent stamp, by George H. Daniels, General Passenger Agent, New York Central & Hudson River Railroad, Grand Central Station, New York.

RIDER AGENTS WANTED One in each town to ride and exhibit a sample 1902 Bicycle. 1902 Models, \$9 to \$15 '01 & '00 Models, high grade, \$7 to \$11 500 Second-hand Wheels all makes and models, good as new, \$3 to \$8.

THE FRANKLIN DYNAMO 50 Watts, 10 Volts, 5 Amperes 3,000 to 4,000 revolutions. Sets of materials, finished parts, complete machines.

The Buffalo Universal Handy Bench Clamp Indispensable for workshop. Is as essential to a kit of tools as hammer or saw.

DIVIDENDS Risk a postal. Send us your name for prospectus of the Rayo Mining and Developing Co. of California. Every dollar invested in these shares will return you regular, handsome, dividends.

The Deadly Faucet! From it comes the germ-laden water carrying with it all the elements of disease, but if you use The Berkefeld Filter the water will be thoroughly purified in passing through the cylinders of Infusorial Earth which retains every atom of solid matter.

Williams' Shaving Soap. Sold everywhere. Sent by mail if your dealer does not supply you. Williams' Shaving Stick, 25c. Yankee Shaving Soap, (Round or Square), 10c.

WE HELP THE ASSISTANCE OF A COMPETENT ENGINEERING DEPARTMENT GIVEN TO INVENTORS. FREDERICK PEARCE, 216 William St., New York

HAVE You a Buffalo?

If you wheel at all and have not yet tried this machine there is a treat yet coming to you. It is a combination of grace, beauty and strength, and is an ideal mount for either sex.

BUFFALO KING SPECIALS which are known as the "Kings and Queens of Bicycles." Gentleman's or Lady's wheel \$35.

THE WM. HENGERER CO., - - - BUFFALO, N. Y.

A NEW RESULT from the EDISON PHONOGRAPH Accomplished. MR. EDISON'S LATEST INVENTIONS—THE Moulded Record & the New Reproducer duplicate the human voice in volume and clearness.

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

OIL-SMELTER-MINES Dividend-Paying Mining, Oil and Smelter Stocks, Listed and Unlisted, our Specialty. DOUGLAS, LACEY & CO. Bankers & Broker, Fiscal Agents.

GO INTO BUSINESS ON OUR CAPITAL. BIG PROFITS, SMALL INVESTMENT. WE EXTEND YOU CREDIT. Only few dollars down, balance monthly payments.

MATCH Factory Machinery. W. E. WILLIAMS, Mfr., 217 South Clinton St., Chicago, U. S. A.

ICE MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO., 89 Clinton Street, Milwaukee Wis.

MODELS & EXPERIMENTAL WORK. Inventions developed. Special Machinery. E. V. BAILLARD, Fox Bldg., Franklin Square, New York.

IF YOU have a workshop you need The Model Maker. Send 25 cents for one year to Box 136, Station B, Cleveland, Ohio.

FREE Catalogue of Architectural, Scientific and Technical Books. Prospectus for 1902, for "Architects and Builders' Magazine," monthly \$2 a year.